

ETTE.
ANIES.

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Royal School of Mines.

PROF. SMYTH'S LECTURES ON MINING—No. II.
[BY OUR SPECIAL REPORTER.]

We must now pass from the subject of the exploitation, or working of the deposits, to consider some other matters connected with the economy under which mines can be worked, and amongst these the arrangements which can be made for the purpose of haulage, underground transport, or conveyance. This portion of our subject is one which has undergone a greater change in the last century than anything else connected with mines. In some parts of the workings you might recognise methods similar to those in use 200 years ago, but this is not the case as regards the conveyance. It is only in the principal operations that we can expect to have means of haulage on a system which in any degree approaches to perfection, or approximates to the thoroughness with which such operations can be carried out at the surface.

In the first place we may point attention to some of the simpler methods, which used to be employed almost universally many years ago. If we go back to the history of mining as given by the ancients, or as carried out at the present day in countries of imperfect civilisation, we shall find that the system of mere carrying of the ore or minerals along the levels is resorted to, and though at first sight this may appear a very rude system, yet under certain conditions there may be reasons for employing it at the present day. Nothing is more astonishing than the quantities of ore which the miners will bring up in this way. In the Museum you may see a mass weighing 300 lbs. brought up by one man from a depth of 45 fathoms below the surface in one of the mines of Peru. With a number of people working at small wages, and bringing up these great weights, under certain circumstances it may be advantageous to employ this method. A few years ago Lord Shaftesbury brought in an Act to prevent women and young children working underground in the coal mines of Scotland, it being then the practice in those mines that coal was brought up on the shoulders of women. There are not many cases in which these methods of carrying are to be seen in this country, but there is one very curious case—that of the billy-boys in the Forest of Dean. The billy is an oval piece of wood, shaped somewhat like a tea-tray, with a sheet-iron ring. This is stacked in a peculiar manner with lumps of the ore—brown hematite—each tray carrying from $\frac{1}{2}$ to $\frac{3}{4}$ cwt., according to the strength of the boy; and, in consequence of the roughness of the ore, it holds well together, although it is placed in many positions. The boy carries his candle in a forked stick between his teeth, and thus has both his hands free for climbing; these boys are, as a rule, a happy set, and go singing along. The reason for adopting this method is to be found in the great irregularity of the repositories of ore: in following out a thread of ore belonging to a chum it may even pass backwards below the level. To have a level beneath them would not be consistent with economy, and circumstances may make it impracticable to put down a winze from the level above; there is, therefore, no plan of getting the ore to the level over the irregular ground except by carrying it. This case must be looked on as exceptional, but it clearly shows that there may be conditions here and there which may make it advisable to depart very far from what we may consider the proper way of working and removing the material.

There is another point we must look at—the necessity of employing different kinds of apparatus for conveyance in different parts of the mine; this is especially noticeable in the system of long wall work. It has been already pointed out that it is a very happy combination of circumstances when you can prolong your rails along the gob roads and along the face of the work, advancing them forwards as the face advances. But there are a great number of collieries where it is impossible to do this; where, either from the coal being very thin, or from the roof not being very secure, and the props having to be set close up to the face, another method, which looks much like an old fashioned one, has to be adopted. This method consists in the employment of sleds, or sledges, a sled being a board on a couple of runners of iron, on which lumps of the material are stacked; the facility of dragging this along the ground is greatly increased by the presence of the underlay in collieries. This caused it to be largely employed even in the collieries of the North of England, where there are now such admirable roads. These sleds were pulled by men or horses all the way to the pit bottom up to the end of last century. This has become obsolete, but the plan of dragging these sledges along the face of the coal may still be seen. Sometimes in the long wall work it is difficult to worm your body through between the props and the coal holed down, so that it is difficult to get in anything larger than the small sleds, or any persons except these boys—the putters. When operations began to be on a large scale, a larger sled was employed in the main roads, drawn by horses. In the South Staffordshire coal mines such a "skip" is still used; it is formed of two side pieces, 9 in. high, 4 ft. or 4 ft. 6 in. long, and 3 ft. 10 in. broad. Boards are placed on the top, on which the material is stacked to the height of 3 ft. An iron bow is attached, by means of which it can be lifted, and there is an iron ring at each corner, to which chains can be attached for the same purpose. The material is kept together by placing a number of iron or wooden hoops round it. In some cases in the ironstone districts these skips have a little rim round them, and then they are employed for raising the material in the shafts. This plan has been abandoned in the North of England, but it still holds its own in the shallower pits of the central districts. In the cases where manual labour has to be adopted for putting the coal, it becomes very important to contract the distance along which it has thus to be conveyed; and this is one reason why the roads are sometimes put closer together than they otherwise would be: the coal should not have to be drawn more than 14 or 15 yards. The next step seems to have been an important one. In the North Country collieries, after shortening the distances which the coal had to be put as much as possible, they placed the coal in large baskets, called corves: this name still survives, though the things to which the name was first given have almost disappeared. During the last century these were universal throughout the West of England: the baskets were about 2 ft. 6 in. high, and had a bow for suspension; sometimes they were dragged along themselves, at others placed on a sled, and thus dragged to the bottom of the shaft. It was considered a great improvement when wheeled carriages were introduced: in this the Germans appear to have been in advance of us.

The lecturer did not think there was any tradition of the existence of sledges in the metalliferous mines, but a sort of tray was used, and pushed along some little distance to the main roadways, and may still be seen in some continental districts. On the other hand, wheeled carriages have been in use for a very long time, the most usual being the wheelbarrow in England and the four-wheeled cart in Germany. The wheelbarrow is very different from that used at the surface; it is very narrow, and has the centre of gravity much lower than in the ordinary one, that there may not be so much danger of capsizing it when going along in the dark. One objection is that the man has to carry a great deal of the weight on his hands or his shoulders, and where it is used without proper roads, as in many mines, the work is very laborious, and the barrow is not so serviceable as it might be. When you come to the removal of material from the stopes something more than a barrow is needed. Agricola portrays a four-wheeled carriage which is still very common in Germany, especially in Siegen, Saxony, &c., where you find narrow crooked levels, and where, therefore, it is important to use something of this kind. It is called the *Hund*, or dog, and the name is said to be connected with the use of dogs very commonly for carrying ore in little boxes at their sides. Dogs were certainly employed in some of the gold mines of the Alps, being made to walk up the snow, and then allowed to descend with little boxes of ore slung at their sides. The *Hund* is rectangular, with the sides sloping outwards a little, but the important point is that a pair of wheels are attached to a strong piece of wood, and a second larger pair are placed almost under its centre of gravity. A wooden handle is attached at the back, and by slightly leaning on this the two smaller front wheels are raised, at the same time that the car is propelled

forwards, so that it runs only on two wheels, but stands on four. In the German plan a pair of beams are laid as rails, and between them runs a pin, which acts as a flange, and thus they dispense with any great breadth of timber; when made without this pin, as in the Hungarian pattern, you require a wider beam. The Hungarian workmen affirm that it is only a bad workman who requires to be thus guided.

It is difficult to say at what period the use of wagons came into play in metalliferous mines. Some attempts to put sledges on wheels were made in the last century, but till the employment of cast-iron tram plates, about 1775, no great improvement was made. There can be no doubt that the Newcastle roads, as the tramways were called, were in use long before the introduction of iron rails, wooden beams being employed; the wear and tear of these soon caused them to lay an iron plate at the top. About the same time as this Mr. Curr, of Sheffield, proposed various improvements in the working of collieries, and particularly in the underground transport. Among these was the laying down of tramplates, a simple iron plate with a flange to it, which was so great an improvement that one horse could then draw several carriages. It is these miners and mine engineers that we have to thank for the whole system of railways. To diminish friction as much as possible, the wheels were made very much thinner at the periphery. This plan may still be seen in many collieries, and while some argue in favour of it, others admit that it is not so economical as the method which has supplanted it. Then came the system of applying wrought and rolled iron for the rails, instead of these tramplates. In some cases wrought-iron tramplates were used with advantage, not being so brittle under the rough treatment to which they were exposed in collieries. The rails were first of a very simple character, merely a bar of iron let into a slot: on these broad wheels ran, but the wear was so considerable, the rail cut so much into the wheel, that where there is a large amount of material to be carried the rails approach to the kind in use on surface railways. Nothing, perhaps, is more frequently employed than the bridge rail, so familiar on the Great Western Railway: the T-headed rail, and the double T-headed, are also sometimes used, while another form often adopted is that of a T-rail with a broad base, in which are a number of holes for spiking the rail down. These rails weigh 12 to 15 lbs. to the yard, or where special strength is required as much as 25 lbs. A common gauge for underground railways is 2 ft., in other cases 18 in., while in others again, as in the ironstone mines of the North, where they work with large quantities of timber, it may be only 12 in. As to the form of the wagon, the first necessity is that of keeping the tub low, for convenience in filling; with coal of a large size it is possible after filling the lower part to stack on the larger pieces, and keep them in their place by means of iron rings. All sorts of contrivances are adopted for tipping; ordinary tubs will be thrown into a frame, and then tipped altogether; larger sized wagons may conveniently have a door opening by the removal of a latch, with a pin for tipping. Whether made of wood strengthened by iron, or of sheet-iron, the form will be determined to a great extent by the mode of tipping. In coal mines, where the material has to be raised in them, the forms mostly employed are these boxes, or hutchies, to which the name tub is given, probably having been preceded by the tub or kibble of iron.

THE NORTH STAFFORDSHIRE INSTITUTE OF MINING AND MECHANICAL ENGINEERS—VISIT TO NORTH WALES.

The first excursion of the season took place on Tuesday and Wednesday, when a visit was paid to the neighbourhood of Bettws-y-Coed. Wales is celebrated for the natural beauty of its scenery; for its traditional legends and historical associations; for its remains of ecclesiastical structures, as well as religious edifices of more recent erection, illustrating the history of successive ages; while the inhabitants speak the language of their remote ancestors, and maintain customs peculiar to themselves. Throughout the Principality there are objects of varied interest to travellers whether in pursuit of business or pleasure, the southern counties being noted for their ironworks and mines, and the northern counties for their quarries and for works showing how engineering skill has triumphed over natural difficulties. Indeed, to such an extent has this been carried that aqueducts, viaducts, bridges, and tunnels are beginning to rank as among the "seven wonders of Wales," which for many generations have included St. Winifred's Well, Grosford Bells, and Snowdon Mountain. Another wonderful work is being carried on in the counties of Carnarvon and Merioneth by the London and North-Western Railway Company, to see which was the primary object of the visit. Bettws-y-Coed, the centre of a district which has many attractions, is charmingly situated at the junction of the counties of Carnarvon and Denbigh, near the confluence of the Rivers Llugwy and Conway. The early train on the morning of Tuesday contained only a small number of members at starting from Stoke, but picked up others on the way, while several members had previously arrived in Wales. The favourite haunt of the angler and artist was reached at 12.45, and shortly afterwards the members were in waggons, and on their way to a place rejoicing in a variety of names, about 12 miles south of Bettws. After a short drive a halt was made, the waggons were left on the roadside, and a short footroad was traversed in order to pay a brief visit to the Fairies' Glen, a most beautiful ravine, where torrent, rock, and foliage are combined in a remarkable degree, the engineers employed in the design and execution having been the laws of Nature, which, operating for ages, have wrought a work that may truly be said to be beyond the skill of the mining and mechanical engineers of Staffordshire or any other county. After a short stay here the journey was continued along the Vale of Lledr, through the village of Dolywyddelan, and along the road underneath an old stone tower, the remains of a castle of that name, interesting as the birthplace of Llewellyn the Great. The road hence rose still more rapidly than it had hitherto done, and by the time the party had driven about ten miles they were more than 1100 ft. higher up than Bettws, and about 1200 ft. above the level of the sea. Following the road down an incline about another mile, the party were brought to the Welsh Slate Company's Quarries, through which they were shown by Mr. Owen, the manager, who led them through chamber after chamber of the works, in order that they might witness the process of getting slate, which differs from coal mining in this important particular, that it throws off no gas, so that blasting can be carried on almost with impunity, the only fear of danger being from the splintered rock after a charge of powder has been fired, against which, however, precautions may easily be taken. On leaving the quarries the visitors were directed rather than led through a tunnel wet, dirty, and dark, about a mile long, to the saw mills and cutting machines, where the large slabs are sawn into given lengths, split through into thin plates, and cut to size for building and other purposes with marvellous rapidity. Business for the day was now finished, and the members of the Institute were soon scattered, some returning to Bettws, others going on to Festiniog or Port Madoc, others remaining in the little village called Rhiwbriddir at one end of it, and at the other end Duffws, or Blannan.

Duffws, or Diffws, is in the extensive parish of Festiniog, and nearly the centre of the Festiniog slate quarries, of which there are many, employing thousands of hands. Before the standard railway gauge was fixed there were tramways in existence that scarcely measured 2 ft. from rail to rail, one of which was constructed something like 40 years ago, and runs in and out amongst the mountains from Festiniog to Portmadoc. At the former the discovery of the slate increased, and the latter was becoming developed as a harbour. Hence the necessity for this line of railway. At first the locomotive power in the upward journey was horse-power; in the downward journey "the whole train was impelled by its own gravitation." Horse-power did not keep pace with the traffic, and after some time engines weighing 5 tons each were made. In 1853 passengers as well as slates began to be carried, and the company have so far had a very prosperous career. This line is a curiosity, the gauge slightly less than 2 ft., the carriage wheels 18 in. in diameter, and the driving wheel of engines 2 ft. in diameter. The gradients are steep and the curves sharp, and the narrow gauge is better adapted than the ordinary gauge for this line. Festiniog is 700 ft. above Portmadoc, the elevation being ac-

complished in less than 12 miles, giving an average gradient of 1 in 92. There is also a narrow gauge line belonging to another company running from Duffws, and both lines are largely used to convey the quarriesmen to and from the neighbouring places where they live, as well as to carry the products of their labour to the coast.

It has for some time been felt that both these lines are inadequate to meet the requirements of the slate trade in the district of Festiniog. The London and North-Western Railway Company have consequently commenced to continue the Holyhead section of their line from Bettws-y-Coed to Rhiwbriddir, a distance of 12 miles, with a view of opening up the Festiniog district slate trade to the off from that district except by the narrow gauge lines and shipment at Portmadoc. Since the formation of the Institute members have from time to time spoken of the importance of moving forward in mechanical appliances, not only on account of the greatly increased cost of manual labour, but also as a means of overcoming difficulties in mining operations. In former excursions they have descended deep and shallow mines, and have seen many of the most recent and most important scientific improvements. On Wednesday the excursionists proceeded to the works, being carried on to Bettws-y-Coed, previously referred to. The new line will be a most expensive one to make, owing to the great amount of tunnelling and open cuttings through hard rocks that will have to be effected. It is being constructed by the company's men, under the superintendence of Mr. Wm. Smith, C.E., Bangor. At the end terminating at Rhiwbriddir there is a tunnel in course of being made 2½ miles in length. The tunnel is being worked by means of two end shafts, and six faces from three shafts. Out of the total length 100 yards will be carried through slate debris, which will have to be carefully excavated and lined with specially strong masonry in consequence of the sloping position in which the flat pieces lie, causing an unequal pressure on the arch. Thence the line will pass through a variety of rocks, including bastard slate, good slate, syenite, granitic granite, and basalt, with a vein of coprolite. At the south end of the tunnel there are five drills at work on a large car, and the whole face of the tunnel is being worked. From the shafts and from the south end only a roadway is being cut through at present, so that when this is completed the debris from the tunnel can be removed by tramway, instead of the more expensive process of hoisting it up shafts. The drills used are the Ingersoll, the McKean, and the Burleigh, all American inventions. The Ingersoll rock-drill was invented and produced for the purpose of effecting the completion of large excavations under the City of New York in 1871 and 1872, up to which time it is said the work was found to progress too slowly to be satisfactory. It has since been improved and perfected with the advantage of actual daily practice. It is claimed for it that it is not only portable but it is effective in action, and its feed being strictly automatic skilled labourers are not necessary to direct it. It will bore in any conceivable position, and in any stone, hard or soft. Each part performs to an exact model, and can easily be renewed where necessary. The McKean drill is a very compact tool, and exceedingly well adapted, in conjunction with the St. Gothard carriage, for driving headings. The Burleigh drill is also light, strong, and compact, and any labourer can work it. It can be used at any angle and in any direction. The two former are worked by Fowler's air-compressors, and the latter by hand power. The Burleigh is capable of being made to work automatically, and the test at these works has established a preference for automatic action over hand feeding in boring.

Of the numerous patents bearing on the prevention of accidents in winding, many of them apply to breakages of rope, others to overwinding only, and others to both. Mr. Walker's patent refers to overwinding only, but can be supplemented by an improved form of arrangement for arresting the fall of the load in case of breakage of rope without in any way interfering with the action of the hook for preventing overwinding. Walker's is said to possess these qualifications—that it is certain in its action; it is constructed so as at the moment of detaching to throw the least possible burden or strain upon the rope and tackle over and above the ordinary strain; and it is not less possible that, with ordinary foresight, in the event of partial detachment, the hook can dangerously release its load. At these works no less than five instances of overwinding have occurred, the hook preventing any damage resulting therefrom. The blasting compound used is cotton gunpowder, which it is considered will stand high or low temperature, and also has this valuable property—that it leaves the air in a comparatively pure state after a blast.

SOUTH STAFFORDSHIRE AND EAST WORCESTERSHIRE INSTITUTE OF MINING ENGINEERS.

ANNUAL EXCURSION.

Although the work of mining engineers, strictly speaking, has only to do with the subterranean regions, the members of the above Institute claim a command over the atmosphere as well, and, like the Queen, always have fine weather on their days of state. Their annual excursion was no exception to the rule, and from Tuesday to Thursday a party of the members were pleasantly occupied with a visit to Oxford, London, and Woolwich; and from the privileges the secretary had obtained, and the pre-arrangements made, they were enabled to see much that is beyond the customary round of sight-seeing, and much which, from their vocations, had a special interest for them. The party travelled by saloon carriages to Oxford, where they were met by Mr. F. Smith Shenstone, in whom they found a guide, philosopher, and friend, and who led them to the several points of interest, and gave a terse and acceptable running commentary on the colleges and other places of note. Without Mr. Shenstone the visitors would have been unable to have secured the "Open Sesame" which seemed a matter of course, albeit at the season when for the most part the doors are impassable barriers in Oxford colleges. Mrs. Shenstone also met the visitors and accompanied them about Oxford. The party included Mr. T. Latham (president), Messrs. W. Hayward, T. Rogers, W. E. Walker, Dr. Walker (Sedgley), Messrs. G. Spruce (Brierley-Hill), J. Spruce, W. Spruce, jun. (Tamworth), S. Griffiths, Miss Griffiths, Messrs. J. Partridge, J. Rowley, J. Millward, A. Rose, J. E. Addenbrooke, H. Hughes, J. W. Hatton, J. Tomson, J. Newey, J. Mantle, J. M. Fellow, W. Spruce, Rollason, J. C. Cooper, Alex. Smith, C.E., and others. The contrast between the great seminaries of learning in Oxford, and the district from which the visitors came is as great as it can be. Here, at Oxford, stand vast buildings where intellectual culture has been the staple trade for centuries, carried on amid surroundings which keep the mind free from distracting cares, and where even narrow means are no bar to happiness, if a man is shaped with a love for books. The reverse of all this is emblematised in the Black Country, where the rich mineral products, and the industries they have engendered, have made everything as different as Hades is from Olympus. Two such typical parts of England, and in such contrast with each other, afford ground for suggestive thoughts. The visitors saw the galleries where Ruskin lays down the law mightily upon art, and where many hundred students study in term time. A number of the colleges were visited, and proof was given at the museum that Oxford is endeavouring to keep pace with modern requirements, by its collection of scientific specimens and books; and its professors of the natural sciences, one of whom, Prof. Rolleston, added to the pleasure and information of the visitors by his easy and happy illustration of the way the learned talk. Not the least interesting among the many interesting things seen were the historical relics in the Ashmolean Museum, including the famous sword of which there is a reminder on every coin of the realm—the one sent to Henry VIII. by the Pope with the title of Defender of the Faith. Some of the treasures of the museum are traced back to the possession of Alfred the Great. The lantern (in very bad repair) which Guy Fawkes had in his hand when he was seized with real scrutiny, and it may not be known to many readers that the remains of that celebrated delinquent, in whose memory so much oxytechny is consumed every year, are said to rest at Hagley. Oxford might well have detained the visitors a week instead of a day. They carried away with them recollections of that city of vast col-

SILVER.—The following extract from the South Pacific Times shows that the valuable discoveries in Nevada of silver have, so far as richness goes, a chance of being rivalled further south. Rich silver mines have been found to the north-east of the Chivato range at Co-

piapo. It is said the ores are producing 2000 marks to the cajon, which gives, at 6400 lbs. to the cajon, the magnificent return of about \$20,000 in coin.

MINING AND METALLURGY AT THE AMERICAN INTERNATIONAL EXHIBITION—No. V.*

Following the brief sketches of the mineral wealth of the far-off British colonies, we come to the most important and to us the most interesting possessions of the Mother Country, those forming a part of our own continent. To say that the British possessions in North America are well represented feebly expresses the admirably arranged collection of economic minerals and geological specimens which illustrate the work of the Canadian Geological Survey. The natural resources of the various provinces are displayed in a collective exhibit, which demonstrates that although the colonies do not share in the satisfaction of 100 years of independence, and that in an area equal to that of the United States they have but one-tenth of the number of inhabitants, yet in the distribution of metallic ores, fuels, and earthy materials from which industrial products can be extracted they have not been overlooked. The exhibit occupies the rear of the Canadian court, along the north wall of the Main Exhibition Building, and is systematically arranged under the following heads:

- 1.—Metals and their ores.
- 2.—Materials used in the production of light and heat.
- 3.—Minerals applied to certain chemical manufactures and their products.
- 4.—Mineral manures.
- 5.—Mineral pigments and dyes.
- 6.—Salt, brines, and mineral waters.
- 7.—Materials applicable to common and decorative construction.
- 8.—Refractory materials, pottery, glass, and pottery.
- 9.—Materials for grinding and polishing.
- 10.—Minerals applicable to the fine arts and to jewelry.
- 11.—Miscellaneous minerals.

It is not our purpose to refer to all of these classes, but only to give a brief resume of such of them as will be of interest to our readers. Those who are desirous of examining more fully into the natural resources of British North America will soon be able to have valuable assistance from a very complete catalogue now in preparation by Prof. Selwyn, the able director of the Geological Survey of Canada. This catalogue will describe the location and character of the deposits of the various minerals, give analysis of their composition, statements as to development of workings, and indicate their geological position. Some of the specimens already have this information attached to them, cut from proof sheets of such parts of the catalogue as have gone to press, and they are very thorough and complete expositions. The Geological Survey have displayed some instructive charts and maps, and a very good collection of rocks. We were particularly impressed with a geological map of Nova Scotia, and also a map, the first and largest we have ever seen, illustrating the geology of North America above the now happily forgotten boundary, formerly known as Mason and Dixon's line. (The original notes of this line are on exhibition also.)

The coals of the Province of Quebec are displayed at the western end of the collective exhibit, while at the eastern extremity blocks and columns of coal representing the various seams in Nova Scotia, Cape Breton, and New Brunswick, from 2 ft. to 13 ft. in thickness, stand as sentinels guarding the display. Among the coals from British Columbia are some very good bituminous specimens, which coke well, but the most interesting is a lump of superior anthracite, which, as analysis shows, contains 84 per cent. of fixed carbon, 2 per cent. of water, 7 per cent. of ash, 1 per cent. of sulphur, and 4 per cent. of volatile combustible matter. This anthracite is found in the Queen Charlotte Islands, on the western coast of British Columbia, and large expenditures to develop it have met with but meagre success, the vein thinning out or changing to an inferior coal. In one instance this coal was found in a vein 6 ft. thick.

New Brunswick displays a block of ordinary bituminous coal, and specimens of Alberta and its accompanying shales. This deposit is peculiar to Albert county, N. B., and has been used to a considerable extent in the United States for the manufacture of illuminating gas, 1 ton of Alberta yielding 14,500 cubic feet of illuminating gas, and 100 gallons of crude oil; 9000 cubic feet of gas from a ton indicates a superior gas coal.

The Alberta has really no definite place in mineralogy, being a sort of cross between a true coal, an asphalt, and jet, various scientists having ascribed it to each of these. In appearance it strongly resembles asphalt. The accompanying shales are also used for generating gas and producing oil, 60 gallons of oil or 7500 cubic feet of gas having been extracted from 1 ton of the shale; but some of the shale is much inferior in product.

Nova Scotia coals are illustrated by samples of the Pictou and Cumberland veins, containing from 85 to 88 per cent. of fixed carbon, and the Island of Cape Breton has quite a number of sections of veins, some of them over 3 feet thick, on exhibition. From the north-west territory there is contributed a block of lignite 1 foot square and 4 feet high. It is, more properly, a coal containing considerable water. Its analysis is:—Water, 10.90; volatile combustible matter, 28.69; fixed carbon, 54.96; Ash, 5.45.

Crude petroleum and its various products represent the Enniskillen oil region in Ontario, which produces about 100,000 barrels per annum. Specimens of crude petroleum are carried to England and impregnated, from the Athabaska River, show one of the products of the north-west territory. Specimens of peat from the Province of Quebec, prepared by Hodge's and by Griffin's processes, are exhibited, with the statements that it sells for \$3.50 per ton at the works, and that the Grand Trunk Railway consumes in their locomotives about 20,000 tons per year. The display of iron ores and their products is very complete, over 50 localities being represented by a great variety of specimens of magnetites, hematites, limonites, limonites (including bog ores), specular and spathic iron, and clay ironstones. There is also a fine meteorite, weighing over 350 lbs., from the province of Ontario, which has combined with the native iron, 64 per cent. of nickel. The peculiar Moisie iron found in the province of Quebec, and some of the iron made from it, are on exhibition. The product from this iron was a question of considerable diplomatic correspondence, bearing upon the duty to which it was subject at our ports of entry. As the iron is reduced in the bloomery the claim was made that the billets should enter as pig-iron and not as refined iron.

Very superior magnetites are shown from some of the islands on the Pacific Coast. One sample of 68 per cent. ore contains but 3 100ths of 1 per cent. of phosphorus. Another specimen yields 71½ per cent. Two magnetites from Ontario yield respectively 63 and 64 per cent. of metallic iron, and a third analysis 65 per cent., but is inconveniently located for shipment.

Hematites of unusual richness from Thunder Bay, Lake Superior, and from the provinces of Ontario, Quebec, New Brunswick, and Nova Scotia—one from the latter yielding over 68 per cent. of metallic iron, and containing very little sulphur and no phosphorus—are exhibited with pig-iron and bars. A titaniferous ore from Bay St. Paul, Quebec, is shown, which, though occurring in large quantities, and yielding about 40 per cent. of metallic iron, has not been worked economically on account of the amount of fuel required to smelt it. The limonites embrace compact ochre and fibrous limonites from Nova Scotia, and bog iron ores from Ontario, Quebec, and New Brunswick. Some of them are exhibited in connection with the pig and wrought iron, slugs, &c., resulting from the melting and refining of the ores. This is especially the case with the Steel Company of Canada, whose display embraces limonite ore, charcoal pig-iron, chilled bar wheels and rolls, cast-iron chains, light castings, and steel of various qualities, all of which are products from the ores displayed. An interesting feature in the peculiar flux "ankerite," a magnesium calcite, employed in reducing the ore at the company's furnace, is a native copper from the Fraser river, in British Columbia, and from the Michipicoten Island in Lake Superior, and sulphides of copper from the various colonies, together with ingots, demonstrate the presence of this metal in Canada. Among the specimens is a portion of a large boulder of copper slag, which analysed 69 per cent. of metallic copper. A large proportion of the copper ores mined in Canada are carried to England for reduction, although works have been constructed in the colonies for smelting and for reduction by both the Hunt and Douglas and the Henderson processes.

Zinc is found in the Lake Superior region in the form of sulphide or blende, but not generally in promising quantity. It is usually associated with iron and copper pyrites and galena. In fact, galena and blende are found together throughout this Lake Superior region—the principal lead deposit of the colonies. Some of the specimens are obtained from the shores of and islands in Silver Lake, located six miles north of Thunder Bay, and 500 ft. above Lake Superior. One Lake Superior specimen analysed 47½ per cent. of lead and 10 per cent. of copper, with about 18 dwts. of gold and over 2 ozs. of silver per ton. This ore is in a solid vein, 4 ft. wide at the surface.

Galena in calcite, pig-lead from Ontario, and galena with pyrites from the Cariboo Mountains in British Columbia are also exhibited. Fine grains of native platinum, which occur with alluvial gold in some of the British Columbian streams, are displayed, and are of marked interest.

Specimens of sulphide of bismuth and metallic bismuth made from the sulphide, which occur near Tudor, Ontario, and antimony ores from Quebec and Ontario are exhibited. The ores from Quebec include both stibnite and kermesite; those from Quebec consist of gray sulphide (stibnite) raw and roasted, displayed by the Lake George Mining Company in connection with antimony, regulus, and Babbit metal. Nuggets of native silver, silver ores, and silver ingots from British Columbia, and native silver, silver glance, and argentiferous galena, from various localities in the Lake Superior region, form an attractive portion of the display. Some of the ores and native silver are remarkably beautiful specimens; particularly is this the case with those exhumed from Silver Lake—a mere rock in Lake Superior, the exposed surface of which was too small and the elevation above the water too slight to carry on the mining operations properly until cribwork was constructed. At present the workings are 550 ft. below the lake, and branch out from the shaft. One specimen, containing \$700 worth of ore, is polished to show the dissemination of the metal throughout the mass. The product from this lot is estimated to have reached at the present time \$2,500,000. A series of specimens of "brown ore" occurring with galena and blende in bitter spar, on the north shore of Lake Superior, are quite attractive.

A score of localities in British Columbia are represented by gold specimens, and a gilded pyramid illustrates the production of this province, which has amounted in value since 1858 to more than \$38,000,000. The annual output has varied from \$1,000,000 to nearly \$4,000,000, and an octahedron representing the average surplus of the pyramid. This metal seems well distributed throughout British Columbia, but the Cariboo, Omineca, and Cassiar are the prominent gold fields; the latter is the most northern, and gives promise of being the most productive.

There are also in the collection gold-bearing quartz and alluvial gold from the north-west territory, and from the Lake Superior region—a gold-bearing arsenical pyrites, gold and silver bars, Paris green, white arsenic, and brown pigment residuum, resulting from the separation of this ore, which occurs in the Marmora district of Ontario. Models and samples of superior nuggets from the basin of the Chaudiers in the Province of Quebec attest to the presence of the precious

metal in considerable quantity. No thorough working of this district has been made, although it is claimed that gold can be found in most of the streams, and that in one case a farmer took out with a pan in one day \$1200. The old French Canadians, unwilling to lose possession of their lands, have discouraged all mining innovations.

The auriferous quartz which occurs along the Atlantic coast of Nova Scotia is illustrated by specimens. Since 1853 this Province has produced about \$4,500,000 of gold. In a modest case there was exhibited a tray containing two gold bars, a number of nuggets and gold dust, aggregating in value over \$13,000. Owing, we suppose, to the watchfulness it required this exhibit has been removed, we hope only temporarily, for it is a relief after inspecting gilded models to feast one's eyes on the pure metal. A knowledge of the presence of such a display would bring many to view so unusual a sight.

A feature in the collective exhibit is the display of the Dominion of Canada Plumbago Company. In one case is a mass of remarkably pure plumbago, weighing 4870 lbs., and in another case are specimens of the mineral and its product—crucibles, lubricants, pencils, stove polish, &c. The graphite from the mines of this company at Buckingham, Quebec, is claimed to contain 96 per cent. of carbon. Specimens from other localities in the provinces of Ontario and Quebec are also shown. An interesting display is made of iron pyrites, with salt cake, nitrate of soda, nitric sulphuric, and hydrochloric acids, and other products.

The collection of building stones is quite large and varied, consisting of sandstones, marbles, limestones, and some very beautiful dolomites; monuments and blocks cut from the various stones demonstrate the quality. One contributed by the Dorchester Freestone Company, of New Brunswick, is a representation of our cracked liberty bell, with its legend, "Proclaim liberty," &c. Superior gypsums, sandstones and sand for furnace linings and glass making, flagstones, grates, and lithographic stones, are on exhibition. Specimens of work done on the lithographic stones attest to their commercial value. The display of slates is exceptionally fine. Specimens prepared for various purposes demonstrate its usefulness, while its strength is illustrated by a slab 7 inches wide and ¾ of an inch thick, resting upon supports 30 inches apart, and sustaining a block of stone in the centre weighing 172 pounds.

The examinations of the collective exhibit of the North American possessions of Great Britain has been to us a source of much pleasure and profit, for by it we learned much about our neighbours, and the resources of the country. To those of our readers who would study the physical features of North Western America we would recommend a careful examination of Mr. Anderson's large map in the collective mineral exhibit, in connection with his descriptive pamphlet, freely given to any who are interested.—*Iron Age* (New York).

ESM BLASTING POWDER.

Urged by the numerous accidents which occur in the handling of the nitroglycerine compounds to seek a safer substitute for those explosives, Messrs. Curtis's and Harvey, of 74, Lombard-street, London, have directed their efforts to the improvement of the old and thoroughly stable mechanical mixture GUNPOWDER, which miners and quarrymen have been so long accustomed to handle with almost complete immunity from accident. They now desire to call the attention of users of explosives for blasting purposes to their new Extra Strong Mining Powder, which they are now prepared to supply at a reduced cost. The success of these endeavours is now fully assured, the ESM powder, after being subjected to the only certain test of actual experience in all parts of the world, having been proved to be superior to any blasting-powder yet introduced. Among practical men the most unanimous opinions prevail concerning the merits of this explosive, and their testimony justifies the manufacturers in strongly recommending it to the notice of all engaged in blasting operations.

The action of the ESM powder, though very energetic, is not shattering—a quality which renders it peculiarly suitable for use in ironstone mines, quarries, and other places where a lifting and rending action is desirable. It is also very suitable to the frequently occurring cases in which a rapid advance of the excavation is of the utmost importance, as in tunnelling, shaft sinking, and the driving of stone drifts, and to those cases where a very hard and tough rock has to be removed, such as the "posts" and "dykes" of slate quarries.

The use of the ESM in granite, whinstone, and limestone quarries will be found to be highly conducive to economy. In the form of compressed pellets it constitutes a very safe and cheap explosive for breaking down coal, a use for which it is particularly suitable by its comparative freedom from smoke.

It is a well-ascertained fact that the effect of a blast of gunpowder is greatly increased by detonating the charge. When this mode of firing is adopted a greater shattering force is obtained with the ESM powder, and excellent results, especially in hard and tough rock. Suitable detonators are now supplied at a low cost.

The ESM powder, which is manufactured by Messrs. Curtis's and Harvey, of the Hounslow, Tunbridge, Glyn, Neath, and Clyde Gunpowder Works, can now be obtained in two sizes, large and small grain, through any respectable dealer in the United Kingdom.

OUR RAILWAY IRON ABROAD.

Our exports of railway iron continue to present the most lugubrious aspect. The United States, once our foremost customer for rails, took only 32 tons in July this year, while in July, 1875, they purchased 1705 tons, and in July, 1874, 7662 tons. In the seven months ending July 31 this year we only sent the Americans 131 tons of our railway iron, while in the corresponding period of 1875 we dispatched to them 17,439 tons, and in the corresponding period of 1874, 72,631 tons. The extraordinary decrease in the consumption of English rails in the United States is, after all, the great difficulty with which English ironmasters have now to contend. The efforts which have been made to develop outlets for our iron in other directions have been only very partially successful, and in the seven months ending July 31 this year we only exported 223,329 tons of our railway iron, as compared with 330,908 tons in the corresponding period of 1875, and 505,164 tons in the corresponding period of 1874. These figures explain at a glance the stagnation which has prevailed for so many months past in the Cleveland and Welsh groups; a once valuable client has taken his departure, and it has not been found practicable thus far to supply the void which his disappearance has occasioned. Not only has the American demand for our railway iron almost entirely collapsed this year, but the Russian demand has also failed in great part, only 30,256 tons of our railway iron having gone to Russia in the first seven months of this year, as compared with an export of 92,592 tons in the same direction in the corresponding period of 1874.

The continued weakness observable in our railway iron exports is certainly very remarkable, having regard to the great decline in prices. Last week the highest quotation for iron rails was 6½. 5s. per ton, while the corresponding quotation in the corresponding week of August, 1875, was 7½. per ton. The decline of 15s. per ton, which has taken place during the last 12 months would under ordinary circumstances have had the effect of reviving demand and stimulating consumption, but we have drifted now into such an extraordinary state of things that ordinary causes have lost their ordinary effects. The railway interest throughout the world seems to have been rather overdoing it up to 1873 or 1874. This was certainly the case in the United States, and probably it was the case also in some parts of Europe. The Germans certainly after the close of the Franco-German war abandoned themselves to wild speculations on the strength of their supposed infallibility and invincibility, and the inevitable result of over speculation has been witnessed. The collapse of Turkish credit has also given a shock to European credit generally, and the wheels of European industry move on languidly and sluggishly in consequence. Another cause which has undoubtedly told severely upon the demand for iron rails has been the vastly increased use of steel rails, the greater durability of which materially reduces maintenance charges, and checks and curtails by consequence the consumption of iron rails. But we incline to the opinion that matters have seen their worst, and that with iron rails selling at 6½. 5s. per ton an impetus must be given to colonial and general consumption. There is still room, for instance, for the construction of an immense system of railways in the Australasian colonies; and as population and wealth in those colonies are steadily and even rapidly accumulating, while the credit of the various Australian Governments has acquired remarkable strength and vitality, we can but think that there may be for some time to come a good demand for our rails upon Australian markets. Attempts are certainly made from time to time to turn to account the somewhat scattered iron ores of the Australasian settlements, but no great importance can be attached at present to these efforts. Yet even the Australian demand for our rails has become more feeble

in this year of universal weakness. Thus we only sent our Australasian friends 15,322 tons of our railway iron to July 31 this year, against 46,491 tons in the corresponding period of 1875.

COAL AND IRON IN THE UNITED STATES.—A bed of bituminous coal about 2 feet thick has been discovered in Llano county, Texas, the side of a hill to the distance of about 25 feet. It is thought that there is a larger bed lower down. In the north-eastern district of Concho county, and in Coleman county, near the Colorado river, of the same State, a large bed of bituminous coal about 3 feet in thickness is reported. It is said to be of good quality. A monster coal depot of the Lehigh Valley Railroad Company has been just completed at Newark. The structure has cost about \$120,000. The operators in the Shamokin coal region have decided to advance the prices 15 cents per ton for all sizes. The Nova Scotia coal trade has been dull at Boston. The retail price of anthracite ranges at Boston from \$6½ to \$7 per ton. American iron rails are quoted at the works at 42½. to 45½. per ton currency; old rails have been quoted at New York at \$21 to \$22 per ton currency.

TRADE AND MANUFACTURE IN THE UNITED STATES.—Notwithstanding the exaggeration which is sometimes used in referring to the growth of foreign competition with British manufactures, the evidence of its increasing vigour and keenness is too substantial to be neglected. And there is no nation whose rivalry in this respect we have more reason to treat seriously than the United States. A letter addressed to the Times by Mr. Douglas Galton calls attention once more to the formidable manufacturing power which is growing up on the other side of the Atlantic. Mr. Galton was one of the judges in the group for railway appliances at the Philadelphia Exhibition, and besides fulfilling his duties as such he appears to have devoted considerable time to the study of the recent progress of American industry. Having visited the United States in 1876, he was able to make a fair comparison of the rate of advances within the past 20 years. He says that the activity awakened by the war, aided by the protective system, has developed and nursed every variety of manufacture, from iron rails to Parisian fancy articles. So much for its expansion in respect of variety. As to its aggregate extent, he points out that whilst from 1870 to 1874 the annual production of coal in the United States increased from 32,000,000 to 50,000,000 tons, that of Great Britain rose only from 113,000,000 to 125,000,000 tons. Of the 50,000,000 of tons raised in 1874 only 500,000 tons were exported, of which about 400,000 tons went to the Dominion of Canada. The coal fields of the United States cover an area of 196,000 miles; the coal is in most cases easily accessible; iron ore is abundant, both near the coal fields and elsewhere. Mr. Galton observes that notwithstanding the stagnation in trade in the United States he noticed several new works in course of erection. The ironworks do not appear to be employed so much in the production of rails for new lines but of steel rails, which are being substituted for iron ones. He says it is not probable that England will much longer be able to supply rails to the United States, and the Returns of the Board of Trade certainly seem to confirm this view. Mr. Galton gives statistics with respect to wages which appear to show that although rather high they are lower than is commonly supposed, and he says that the working day is at least ten hours. He points out that unskilled labour is much more extensively used to guide machinery than in this country. Mr. Galton advances no reasons for the increasing superiority of American industry beyond the allusions to the length of the hours of work, the use of unskilled labour, and the fact that the manufacturers work with great energy. But he strongly urges English employers to visit the Philadelphia Exhibition, and themselves investigate the causes of a growing competition which they cannot afford to despise.

MR. MACDONALD, M.P., ON THE STATE OF TRADE.—Mr. Macdonald, M.P., addressed the general meeting of miners in Glasgow on Thursday. He exhorted the miners to build up their unions. Wherever union existed, he said, there existed a latent power ready to be exercised for good when the favourable opportunity occurred. Tracing the history of recent reductions in England, he showed that where union did not exist the men were remorselessly driven down to the last; while in the county of Durham, where there was a powerful union, reductions were made after mutual and friendly deliberations. So far as the commercial condition of the country at the present moment was concerned, he did not see anything exceedingly hopeful for the bettering of the condition of the working men. It was said that we were now in a great commercial crisis, and that things were exceedingly bad. That he denied altogether, in so far as mining matters were concerned. What were the facts during last year, when times were said to be bad? In that year 7,000,000 tons more coal were produced than in the year before, and the ordinary ratio of increased production for the last twenty-five years was more than maintained. In the Cleveland district there never was greater activity than at present in the making of fine iron. It was true that the amount of manufactured material was not so large, the particular reason for this being that we had lost the markets in several districts of a particular character. America, for example, no longer purchased the large quantity of rails that she was wont to do, and the wisemen who ruled the public mind said this was owing to the intemperate demands of the workmen. He ventured to say that such was not the case, and that if the restrictive tariff were removed to-morrow English iron would find its way into every market and corner of the United States. After referring to our relations with Germany and Russia, Mr. Macdonald said he hoped they had now seen the worst of matters, and he believed that better days were in store for the miners. He was not, however, going to counsel anything like undue haste or outrageous conduct, but he believed that if miners were wise an advance might be got in the whole coal and iron districts of Scotland by Oct. 1. That could be got by union, but not without it. With a growing scarcity of labour in Scotland, and by the power of union—and union alone—the men might obtain an advance of 6d. a day at least by Oct. 1—certainly before Nov. 1. Mr. Macdonald afterwards went on to refer to his visit to America, for which country he sails to-morrow, and indicated that the twofold object of his tour was to obtain for himself needed rest and freedom from worry and care, and to inspect the more important mining districts of the New World, with the view of seeing whether these opened better prospects to the miner, who at home was denied an existence.

THE IRON TRADE.—The distress and disasters which have crowded so thickly upon the Iron Trade during the past 18 months exhibit as yet no sign of cessation. They have almost ceased, however, to be matters of individual interest. The results of the present depressed state of affairs threaten soon to become a matter of national concern. In the iron manufacturing districts work is being lessened in every direction, mills and forges are being reduced to half-time, if not entirely stopped, numerous pig-iron furnaces are being put out of blast, and tens of thousands of workmen are out of employment. Fortunately harvest operations throughout the country keep a large number of them at present employed, but the time of the winter is far from satisfactory, and public attention will soon have to be directed to the alleviation of their distress. Unfortunately while this disheartening condition of affairs exists all our accounts from America inform us that there is no prospect whatever of that country returning to us as a customer for either iron or steel, while Russia also has determined to place serious hindrances in the way of our competing with native manufacturers for both articles. Other markets, their demands from an inability to borrow money in the present state of discredit and upon borrowing States. It is, therefore, scarcely surprising that with considerable despondency still exist, and that the future is looked forward to with considerable apprehension. That this exists to a serious extent may be best judged from the severe depression which has taken place in ironworks property. A few years ago it was possible to purchase splendid works, which cost £250,000, a few years ago for less than half of that sum, and only last week a property upon which £100,000 had been expended could be purchased for less than £50,000. These facts demonstrate the ruinous state to which the trade has fallen even more plainly than the generally falling figures of the Board of Trade (Customs) returns. If the public mind, however, depend upon the present affairs a remarkable time will undoubtedly bring about, but he would be more than sanguine who could at present detect its appearance. The immediate prospects of the whole trade are still unsatisfactory, and there is no expectation of any revival during the current year.—*STANDARD* THOMSON, Leadenhall-street, London, Aug. 16.

* No. IV. appeared in the Supplement to the Mining Journal of Aug. 13.

BILSON AND CRUMP MEADOW COLLIERIES COMPANY.—A dividend at the rate of 10 per cent. per annum, free of income tax, has been declared for the half-year ending June 30.

BRITISH MINES.

MARK VALLEY.—Wm. George I. Stanlake, Aug. 17. Halliburton shaftmen

bottom of the *Is*, east of cross course, and put them to steep east of the same. This slope produces $1\frac{1}{2}$ ton of lead ore per fathom, with an improving appearance. The weather is again very hot and dry, and our supply

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* With this week's Journal a SUPPLEMENTAL SHEET is given, which contains—Original Correspondence: Western (American) Enterprise; Richmond Mining Company; American Mines—Richmond Consolidated; Pacific Coast Mining Notes—No. V. (J. D. Power); Mining in South Australia (J. B. Austin); The Abercrombie and Newport Colliery; Joint-Stock Companies Law; Commerce, Finance, and Mining (R. Trevellick); Mining in Ireland (G. Henwood); Prospective and Progressive Lead Mines (J. J. Reynolds); the Discovery of Devon Great Consols (Josiah H. Hitchens); New Consols; a Liberal Successful Adventurer (B. Symonds); New St. Agnes; West Frances Mine; Vales of Conway Mine; Dowling—The Wild Duck, or West Frances Mine; The Father of English Geology—Foreign Mining and Metallurgy—Foreign Mines—Steam Engineering—Economic Generation of Steam (Illustrated)—the Compensatory Production of Steam (Illustrated)—Meetings of English and Australian, San Pedro, West Godolphin, Wheel Unity Wood, Prince Patrick, East Van, Cardiff and Swansea, Llynvi Tondy and Ogmore, South Crofty, and Mersey Steel Companies, &c.

The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, AUG. 18, 1876.

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* At the works, 1s. to 1s. 6d. per box less for ordinary; 10s. per ton less for Canada; 1X 6s. per box more than 1C quoted above, and add 6s. for each X. Terms—plates 2s. per box below tin-plates of similar brands.

REMARKS.—It is well when general impressions receive the confirmation which reference to reliable published statistics affords. That this year has so far been generally unprofitable in the various branches of the metal trade there has been no doubt. This fact is but the too generally admitted experience of those engaged in the trade, and that this unprofitableness is not confined to metals is also acknowledged. But the published returns of the exports and imports put the public in possession of a condition of affairs for which, perhaps, they were hardly prepared. Decrease, both in the one and in the other, has been for long the characteristic of these periodical returns, and although the last returns exhibit no material alteration in the proportion of the decrease as compared with previous returns, yet it appears that the causes for further contraction in trade, be they what they may, are still in active operation, and there is no indication that the course of the tide of events is likely soon to turn. The ebb has not yet ceased, and it is questionable whether for the remaining months of the current year there will be any material relief. As regards those metals which from the returns it appears still continues to leave our shores in considerable quantities, this can only be accounted for by the fact that manufacturers, not finding a ready sale at home, are obliged to relieve their ever accumulating stock by shipments to those markets in which they have reason to suppose a demand is likely to arise. From this cause many of the foreign markets are already more than fully supplied, and thus the return to a healthy activity in trade is retarded, and not only so, it is impossible that the consignment business can be carried on except at a loss to the party consigning, and as this must come to an end the disease will work its own remedy.

The returns for the month of July with reference to the iron trade are among the most discouraging in the list. The figures show a total of all descriptions of 198,228 tons, of the value of 1,780,472s., as against 259,085 tons, of the value of 2,562,732s. during the corresponding month last year, or a decrease of 23½ per cent. in quantity, and 30½ per cent. in value. Looking at the various descriptions of iron in comparison, it appears that the largest falling off has been in railway material, which estimated in quantity is equal to a decline of 42 per cent., and in value 47 per cent.

It is difficult to believe that the falling-off in our rail trade with the United States is represented by the following figures. During the first seven months of last year the shipments of railway material to that country were valued at a million sterling, and during the corresponding period this year the sum total of our shipments does not exceed the value of 300,000 sterling. Our trade with Russia, Canada, and Australia is nearly at a standstill, and so it is with almost if not with all the markets with which we deal, arising in great measure from the distrust which is universally felt regarding foreign enterprise, and the slowness with which the investing public will advance the required amounts to carry on extensive works. But notwithstanding all these untoward circumstances there is no question but that eventually the trade in metals will right itself, and all that can be done is to wait patiently until such a time as the legitimate demand shall call for increased production, and until then limit the production within the demand.

COPPER.—The reduced prices of Chili bars have attracted the attention of buyers, and sales have been less difficult to effect. The result is that the downward tendency which the market assumed has been arrested, and a steadiness in prices preserved. Whether this is merely a temporary movement to uphold the market, to be quickly followed by a reaction, remains to be seen, but it is sufficient for the moment to know that it has produced a beneficial change in the demand. The improvement has not altogether been confined to Chili, but orders have been given out more freely for manufactured, and 83½ has been realised for 4 by ½ sheets and sheathing. In yellow metal some business has been done in braziers and sheathing at 7½. Several of the sellers of yellow metal have re-united again, notwithstanding the complete failure of all previous association; but they hope that the present arrangement will be better observed and more successful. Considering the unprofitable state of business it is really not surprising that sellers should endeavour to protect their interests in every possible way, and see whether combination will not prove more advantageous than open competition; but without wishing to comment unfavourably upon that which, by those interested, may be deemed a great benefit, yet there is always the fear under such circumstance, of foreign supplies taking the place of English. It is exceedingly doubtful in a free-trade country to continue trade combinations for any length of time with success.

IRON.—There is no improvement whatever to record in the position of the South Wales trade. The confirmation of the protective policy about to be adopted by Russia is a blow to the ironmasters who had hoped, now their trade in other quarters has nearly ceased, Russia would still have supplied an important outlet for surplus stocks. But the protective policy very distinctly points to the exclusion of all English manufactured iron and steel. Shipments are being made to Canada and Brazil, but trade generally is as dull as possible. There is no immediate prospect of the Cyfarthfa Works being set to work again, and the only alteration in the condition of trade is that the works which have been already reported as slack are still more slack than before; and those that have suspended operations are likely to continue in a state of suspension.

The report from the North of England, while presenting no po-

sitive improvement, is not at all events of a more discouraging character than heretofore. The demand for pig-iron for immediate use has been very limited, but for parcels for distant delivery there has been rather more active enquiry, and there are indications that the supposition is gaining ground that matters will eventually improve. The uneasy feeling arising from the financial difficulties into which one or more of the local firms has fallen is in a great measure allayed. It is proposed that the extensive works of Messrs. Thomas Vaughan and Co. should be carried on under the management of trustees, and as a similar arrangement is likely to be entered into in one or more instances in which firms have fallen into financial difficulties it is hoped that the anxiety on this ground will not only be allayed, but speedily vanish altogether. No. 1 pig is quoted 49s. 6d.; No. 3, 49s.; and No. 4, 42s. The make is still in excess of the demand, and in order to prevent the accumulation of stocks it is highly probable that more furnaces will be long be dumped down or blown out. In the finished iron trade there is not a shadow of improvement to record. What few orders are still in course of execution are nearly worked out, and order-books are becoming very bare of fresh orders. There is no change in quotations, and it is questionable whether it would be possible for ironmasters to accept contracts much, if at all, below current quotations, which, circumstanced as they are in regard to prices for raw material and wages, leave them but little, if any, profit. The Glasgow pig iron market is a trifle easier, mixed numbers being now quoted 56s. 3d. buyers, and 56s. 4½d. sellers.

SHIPMENTS.

Week ending Aug. 14, 1876	Tons 11,375
Week ending Aug. 12, 1876	7,658
Decrease	3,717
Total decrease for 1876	69,534

LEAD.—This metal keeps up the recent advance, ordinary English pig being 21½ to 21½ 2s. 6d., and special brands about 2s. 6d. to 5s. higher.

SPELTHER.—Steady, without change in value.

QUICKSILVER.—One lot has been sold at 8½, but with the exception of that special transaction 8½ 10s. has been the price for all other business.

TIN-PLATES.—The market is better, with fair prospect of continued improvement. Advances from the States are decidedly more encouraging, and as several sales have been made sellers are holding for increased prices. Coke makes are in particularly good request, and some of the makes have sold freely for forward delivery.

TIN.—The market has been a little undecided. In the former part of the week prices gave way, and 71½ 10s. was at last accepted for Australian, and 72½ for Straits. The market yesterday again hardened, but to-day sellers have been rather more pressing, and show a desire to take advantage of the slight rise, but as buyers withdraw on the least signs of weakness, it has been difficult to sell more than very small lots at 72½. The deliveries for the first half of the month are said to be comparatively small, and unless they go on at a much faster rate for the second half stocks will have increased, and any hope of an advance be entirely lost for a time.

THE IRON TRADE.—(Griffiths's Weekly Report).—Friday Evening.

We report a reduction in the price of G.M.B. Scotch pig-iron this week of 3d. p. ton. The price at the close to-day in Glasgow is 55s. 3d.; this day week it was 56s. 6d. We quote makers No. 1 iron—Gartsherrie, 64s. 6d.; Coltness, 67s.; Calder, 64s. 6d.; Langloan, 65s. 4d.; Summerlee, 59s. 6d.; Monkland, 57s. 6d.; Glasgow, 62s. 6d.; Eglinton, 58s. 6d.; f.o.b. Ardrossan; Shotts, 68s. f.o.b. Leith; Kennel, 58s. f.o.b. Boness. We have to report a reduction of 1½ p. ton in the Lowmore and Bowling brands of bars this week. The price of their lowest class bars is 20s. per ton, and plates 24s. per ton, the price ascending according to size and weight of plate and speciality of bars. The leading Yorkshire houses—Lowmore and Bowling—are reduced to 20s. the daily hand to south order for this kind cannot decrease in fact, they are the increase, and Staffordshire iron, like Lowmore and Bowling, must be had. The engineers will not substitute other makes for it, hence B.B.H. and Round Oak have, no doubt, a sufficiency of orders to keep the works running. As a rule, the makers of finished iron in both North and South Staffordshire are careless about orders. If inferior iron will suit builders and contractors go to other districts, but when best Staffordshire iron is wanted the mills take the order as a matter of course at fixed rates, content with no more which the trade has to do. We have no charge to report in the tin-plate trade; as we stated last week, prices of tin-plates cannot go lower. One of the largest concerns in Wales have stopped altogether this week, and the makers of common plates are positively losing money. The Middleborough market was flat on Tuesday. Scotch pigs have been a little lower. The West Coast houses have now come down to their lowest. Good hematites may now be had at 70s. per ton. We recommend our friends to buy hematites.

Messrs. HARRINGTON, HORAN, and Co. (Liverpool).—COPPER: Arrivals here during the fortnight of West Coast, B.A., produce—Lady Penrhyn, from Valparaiso, 30 tons bars; Galicia, from Valparaiso, 498 tons bars, 150 tons ingots, 112 tons Barilla; Delta, from Carrizal, 878 tons regulus. At Swansea, nil. Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at—

	Ores.	Regulus.	Bars.	Ingots.	Barilla.
Liverpool	—	—	8,290	538	—
Swansea	845	3763	2,907	—	—
Total	845	3763	11,197	538	62

Representing about 13,580 tons fine copper, against 13,942 tons July 31; 13,217 tons Aug. 15, 1875; 15,500 tons Aug. 15, 1874; 23,600 tons Aug. 15, 1873. Stock of Chili copper in Havre, 5755 tons fine. Stock of Chili copper aloft and chartered for to date, 10,000 tons fine. Stock of Chili copper in London, chiefly Australian, 5219 tons fine.

Messrs. SANFORD and BIRD.—Business is exceedingly dull in all branches of the iron and metal trades, and prices generally show a slight decline. Tin closes fractionally better in price. Other metals quiet.

Messrs. FRY, JAMES, and Co.—COPPER has been without life; the demand for Chilian has kept prices of that description from receding further, but both English and Australian have become easier to buy.—IRON continues depressed.—TIN is sluggish, and lower prices have become general.—SPELTHER has been in better demand, and improved values realised.—LEAD has remained steady at late recovery in prices.—TIN-PLATES in moderate demand.

Messrs. PILEY and ABEL.—GOLD: We have nothing fresh to report, all arrivals being purchased by the Bank of England. About 634,000s. has been sent in since our last circular, and 264,000s. sovereigns withdrawn. The Don, from the West Indies, brought 21,000s.; the P. and O. steamer Tibet, 401,000s.; from Australia and the East; the Huron, 21,000s.; from New Zealand; and the Tagus from the Brazil, 99,000s.—SILVER: Since the date of our last circular there has been considerable activity in our market, large amounts having been disposed of at rates ranging up to 53½d. per oz. standard, and even higher for immediate delivery, and a lower price has been realised.—COPPER: The arrivals from America have not been very large, the chief supply having come from the Continent. The Don, from the West Indies, brought about 15,000s.; this realised 53½d. per oz. standard. The P. and O. steamer Lombardy, leaving Southampton this day, takes 59,000s. to Bombay. The Sorata, from the Pacific, has arrived at Liverpool—amount of silver not yet known.—MEXICAN DOLLARS: The Ville de St. Nazaire has arrived at St. Nazaire with about 40,000s. The portion for London has been disposed of at 53½d. per oz., the last quotation previously current being 51½d. per oz.—EXCHANGE on India for Bank drafts at 60 days' sight is 1s. 8½d. to 1s. 8½d. per rupee. Tenders for the India Council Bills were received yesterday. The amounts allotted were—To Calcutta, 14,70,000; Madras, 15,30,000; Bombay, 20,00,000.

THE MINING SHARE MARKET, so far as regards tin mines, has been further depressed this week by another fall of 2½ p. ton in the standard for tin ore. This metal is now lower than it has been for the last 50 years. And, when we look at the serious losses now incurred by many deep tin mines, and the heavy calls made upon the shareholders, we are tempted to ask why are they not temporarily suspended, or stopped altogether? Agents and merchants may wish, probably, to see them go on, but the time is coming when other considerations will have to be weighed.

Tin smelting, as we have often observed, is a great monopoly, in which the interests and the feelings of the miner are never consulted, and the smelters may bring down the price of tin so low that it will not pay the Australian miners to flood our markets with it; but in the process many Cornish mines that are now selling large quantities, and helping to glut the market at a serious loss to the shareholders, must go to the wall. And where the production is thus materially reduced—and we now fear not before—we may look for a good advance in tin, and the resuscitation of young mines.

At the copper ticketing, on Thursday, the standard declined 2½ 5s. Lead is firm, and as this metal keeps in demand, and is not subject to the same fluctuations that act so prejudicially in tin and copper, lead mines are in favour, and are likely to command a good deal of attention. The settlement of the fortnightly account on Wednesday was not particularly heavy, but occupied a good deal of the dealers' attention.

The mines mostly dealt in since our last have been Tankerville, Roman Gravel, Pennerley, Glenroy, Rookhope, Ladywell, North East Van, West Chiverton, West Tankerville, and a few others.

Roman Gravel, 1½ to 1½; the month's ore—220 tons—sold this week for 3132½ 5s. Tankerville, 10 to 10½ ex div. West Tankerville, 1½ to 1½; Great Laxey, 17½ to 18½. North Laxey have been in re- of water, and men working in bottom levels.

Rookhope in demand at 14s. to 16s.; we understand some of the directors have just returned from visiting this mine, and are well pleased with its prospects. The produce will shortly be increased to 40 tons of lead ore per month, and the mine makes good profit. The shares, it will be seen, are little more than half the price they were at a few months ago, and are likely to rise again. South Roman Gravel, 1 to 1½; Pennerley, 1½ to 1½; Asheton, 1 to 1½; Ladywell, 1½ to 1½; the sale of lead here—20 tons—realised 207½. Pateley Bridge, 3½ to 4; Pennant, 5 to 5½; West Asheton, 1½ to 1½; Van, 36 to 38. Van Consols, 1½ to 1½; the new drawing-shaft and machinery will be completed by the first week in September. East Van, 8 to 8½; West Chiverton, 17½ to 18½. West Craven Moor, 10 to 11. Glyn, 2½ to 3½; great expectations are formed of the bottom level. Great West Van, 12s. 6d. to 15s.; the course of ore in the 46 still holds good. Carn Brea, 32 to 34; Cook's Kitchen, 2 to 2½; Dolcoath, 32 to 34; East Caredon, ½ to ½; East Pool, 12 to 13.

Providence Mines; at the meeting on Tuesday the accounts showed a loss on four months working of 5600s., a balance against the company of 12000s., and a call of 10s. per share was made. The tin sold for the four months (44 tons) realised 1860s. South Crofty, 12 to 14; at the meeting here a call of 10s. per share was made. The loss on three months working was 2317s., and the balance against the mine 1296s. The manager stated that during the four years and a half he had managed the mine he had sold 700 tons of tin, besides copper; and if tin had kept its old price there would have been a profit of 20,000s. on the actual sales instead of a loss. And further, owing to the low price of tin, the tin ground of a low quality had to be left unwrought. The present depression in the metal markets rendering it absolutely necessary that the utmost economy should be practised, a record should be made of the honour to which the South Crofty adventurers have entitled themselves in being the first to pass a resolution ordering the purchase of boring machinery; and the success of the machines will doubtless assist materially to place the concern in a profitable position. Marke Valley, 1½ to 1½. Devon Great Consols, 2 to 2½; the 190 east is worth 40s. per fathom; 145 east, 40s. per fathom; in the 115 east lode 3 to 4 ft. wide, worth 25s. per fathom.

New Consols, 1 to 1½. West Godolphin, 1½ to 1½; at the meeting a call of 2s. 6d. per share was made to meet an adverse balance of 6577s. The steam stamps have been at work about a month. The sale of tin on Saturday was 13 tons 2 cwt., realising 5300s. The July costs were 6137 10s., including 607s. for machinery. The returns for the next month are expected to be about 14 tons of tin. Pyramon, 3s. to 5s. South Condurrow, 4 to 4½. South Carn Brea have declined to 1s. Tincoft, 17 to 18. Prince of Wales, ½ to ½; the lode in the 55 west is worth 12s. per fathom, the 45 west yielding a little copper. Parys Mountain, 12s. 6d. to 15s.; the 90 cross-cut south presents strong indications of mineral being near at hand. The sampling this week is 200 tons of copper ore. West Great Work, ½ to ½. West Seton, 35 to 40. West Tolgus, 52 to 54. Wheel Agar, 2 to 2½. Wheel Bassett, 10 to 12½. Wheel Crebor, 2½ to 3½; the lode in the 108 east continues worth 40s. per fathom. Wheel Grenville, ½ to 1; the sale of tin, 11½ tons, realised 5200s. 9s. 5d. Wheel Kitty (St. Agnes), 2 to 2½. Wheel Uny, 1 to 1½.

Penstruthal, 14s. to 16s.; in the 58 end is being pushed forward, and a course of copper ore is confidently expected in the eastern end. Cathedral (new issue), par to ½; the two bottom ends are being pushed on with all speed to get under the fine gossan, when a good course of copper is expected. New Rosewarne, ½ to ½; the lode in the bottom of the 67 is worth 12s. per fathom. The mine has again sampled 18 tons of copper ore, the best parcel of which yields 18 per cent. produce. Relistian Consols, ½ to ½; St. Patrick, 1½ to 1½.

Almaden and Tiritio, ½ to ½; Emma, ½ to ½; Argentine, ½ to ½; Condes, ½ to ½; Chontales, ½ to ½; the advices this month show a loss on June workings of 831 16s. The gold return was 134 oz., value 3444s. Of tailings 120 tons have been treated, and these will give a profit of 767s. Javali, 6s. to 7s.; the advices here show a profit for June of 412s., and a gold return of 1175s.; 28 tons of tailings produced 45 ozs. of gold. Eberhardt and Aurora, 8½ to 9; Flagstaff, 1½ to 1½; Frontino and Bolivia, 2½ to 2½; Santa Barbara, 1½ to 1½; the advices for the month of June show a profit of 7222 15s. 4d. The gold returned, 3996 ozs., realised 10882s. Mine cost for the month, 975s. 10s. 8d. The gross profit for the half-year ending June 30 is estimated at 3429s. 15s. 10d. During the same period the shaft has been sunk on the course of the lode 8 fms. 5 ft. The expenditure on new works has been 4822s. 4s. St. John del Rey, 35s. to 35s.; the produce for the month of July is 15,887s. Pestarena, ½ to ½. Richmonds have advanced to 10½ to 10½, and leave off 9½ to 10½; San Pedro, 1 to 1½; South Aurora, 7s. to 9s.; Sweetland Creek, ½ to ½.

forward to in the 58 east, driving towards the junction of the granite and killas; this end is now approaching the copper disc

BRISTOL MINEING SCHOOL—WHITWORTH SCHOLARSHIPS.—The first place in the list of these scholars for the present year has been won by Mr. Henry Selby Shaw, who has been a student during the past three years in the evening classes of this school. The maximum value of these scholarships is 800*l.*, and if Mr. Shaw can retain his place during the three years the scholarship is held this is the sum he will receive. It may be questioned whether a more valuable academical prize than this exists.

Date.	Mines.	Tons c. q. lb.	Price per ton.	Amount.	Purchasers.
Aug. 17—	Balmynheer	1 18 1 9 ...	\$40 0 0 ...	£ 76 18 3—	Redruth.

Notices to Correspondents.

* Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be read on receipt; it then forms an accumulating useful work of reference.

STEAM TRAMWAY TRACTION.—“F. G. O.” (Manchester).—A special Act of Parliament would have to be obtained to enable you to use steam on the London tramways, however good your invention might be. The process is not very costly, but you had better consult a parliamentary agent. Notices as to private bills must be given in November, so that you have no time to lose if you think of taking advantage of next session.

FETTLING MATERIAL.—Mr. Barnett, who has lately invented a new fettling material, is requested to forward his full address; it is required for a Staffordshire ironmaster.

SIL.—Perhaps some of your correspondents may be able to say what progress the Maun (late Ohio) Mine is making. They seem to be a long while getting the 100 (or more) tons of silver-lead ore ready for market. It is high time, as they should have had the hoisting and dressing apparatus ready and at work some time ago. The locality is excellent.—ISLE OF MAN.

Received.—“S. E.” (San Francisco).—“R. P. R.” (New York). They have been forwarded.—“Nevada.”—“N. W.”—“Shareholder” (Bristol). Write to the secretary at the office.—“Shareholder” (Newport). We will publish the information if forwarded.—“Reader” (St. Leonards).—“W. W.” (Saltburn).—“W. T.” (Cork). We will endeavour to ascertain.—“P. F. T.” (Wolverhampton). We should feel obliged if our correspondent would send us some particulars of the omissions he refers to. We shall be glad to remedy any deficiencies.

IMPORTANT NOTICE.—REDUCTION OF POSTAGE ON THE “MINING JOURNAL.”—In consequence of the new POSTAL CONVENTION, which came into operation on July 1, the postage of the Mining Journal to many countries will be reduced to one fourth. Henceforth the subscription will be 1s. 10s. 4d. per annum (39 frs.), postage included, for the following countries. The amount will, if desired, be collected at the subscriber's residence at the end of each year. The subscription continues until countermanded.—Austria, France, Belgium, Denmark (including Iceland and the Faroe Islands), Egypt, Germany, Gibraltar, Greece, Heligoland, Italy, Luxembourg, Netherlands, Norway, Portugal (including Madeira and the Azores), Roumania, Russia, Serbia, Sweden, Switzerland, United States, Malta, Turkey, Morocco, Tunis, and the Canary Islands. Spain 1s. 19s. (50 frs.).

AVIS IMPORTANT.—AUX ABONNES ETRANGERS DU “MINING JOURNAL.”—A cause de la nouvelle CONVENTION POSTALE il y avait, à partir du 1er Juillet 1876, une grande diminution du prix de l'abonnement du Mining Journal pour bien des pays dont le taux des postes était jusque là bien élevé. A partir du 1er Juillet le prix de l'abonnement est de 39 frs., le port compris, pour l'Autriche, Belgique, France, Danemark et ses dépendances, l'Egypte, l'Allemagne, la Grèce, l'Italie, Hollande, Portugal et ses dépendances, Roumanie, Russie, Serbie, Suède, la Suisse, la Turquie, l'Afrique septentrionale, etc. Le montant, si l'on le veut, sera touché à domicile, la fin de l'année. L'abonnement continuera sans avis contraire.

THE MINING JOURNAL,

Railway and Commercial Gazette.

LONDON, AUGUST 19, 1876.

THE ROUND AND SMALL COAL QUESTION.

If the miners of Northumberland instead of being able to earn larger wages should have to accept even a 20 per cent. reduction in the wages they are now earning they will have only themselves to thank. A less defensible course than that which they are now pursuing—one which has necessitated the notice of a reduction to that extent—it is hardly possible to imagine sensible men to take. This Journal has credited the miners of the North of England with being amongst the most conciliatory, even as they are perhaps the best educated, of all the miners elsewhere to be found. They have been the longest under a system of arbitration, which has no doubt worked well for them, but which has, nevertheless, shown a disposition to be fair, and a consequent readiness to act not altogether obstructively in their intercourse with employers, who by consenting to such terms for adjustment of wages scales have demonstrated a promptness to deal with their men upon a principle of the utmost fairness and the kindest consideration. Nor are we prepared to say that we believe the miners of Northumberland will even yet drive us to conclude that they are less reasonable than heretofore, or than heretofore less worthy of being cited for the imitation of very many of their fellows. There is, nevertheless, room enough for apprehension that these Northumberland miners may by departing from a course which has hitherto given them distinction bring about their notoriety. What infatuation can have seized them we are at a loss to understand.

How stands the case? Thus. Their employers desire to make the very most of their property by turning it into a saleable, instead of having it reduced to an unsaleable, and, therefore, a profitless, commodity; in other words, they desire to bring more large and less small coal to bank. Looking around, they find that throughout South Wales there is a system in vogue by which in that district this result is accomplished. Consistently with the principle that has regulated their intercourse with their men the employers do not say—“What we desire to have done here in the North of England is being done yonder in South Wales, and we give you notice that after a fortnight we intend to work upon the same method.” This they might fairly have done, and if they had done it they could not have been accused of doing other than duty. But they prefer rather to say—“Our present method is wasteful and ruinous. In South Wales they are working upon the right principle, depute some of your number to come with a deputation of employers, and together as men having interests alike we will go and judge for ourselves if our mutual wisdom does not consist in introducing into the Northumberland coal field a practice which the masters, at least, believe is being successfully practised in the coal field of the Southern Principality.” “Agreed!” is shortly the reply of the men, and they select discreet, experienced, and clear-headed men from amongst their number to conduct the enquiry conjointly with the delegated employers. Every facility for the ascertaining of the true facts of the case is afforded in Wales, and in due time the miners' deputation make their report to the men who chose them for the duty. That report is in favour of the method which the employers desire to adopt. If it had been otherwise the operatives' deputation would have been unfaithful to the interests of their constituency. How, if they were honest men, could they otherwise report? They found that the offer of the employers made it certain that less wages could not be paid, whilst if any man by more care or increased skill could make more round coal he to the same extent would increase his wages.

The proposal of the coalowners was to pay for round coal only, and to pay nothing for small. They would proceed thus—Weigh the whole of the coals sent to bank, first weighing the gross and booking it, and then, after the tub was teemed, weigh the small and book it. The quantity of small in every tub would then be deducted from the gross. This would leave the quantity of round, and upon that the hewer would be paid. Than this no other change was proposed. The way in which the change would work is thus illustrated. Every colliery would be taken upon its own merits. Whatever might be the percentage of small in that colliery the same percentage would be put on to the price of round coal. In money earned the arrangement would in this way work—If now the price were 1s. 9d. per ton, and the pit should be making one-third of small coal instead of paying for that one-third of small, the owners would pay 10s. 4d. per ton more on the round, which would be exactly the price the colliers are now receiving for the small. In this way the price would be 2s. 7½d. per ton instead of 1s. 9d., which would be the same wages. Herein it should be seen that, as we have stated, less wages is impossible. Need it be pointed out how by a little care the wages which the men are now earning may be increased? Here, however, that is shown. If a collier is now filling 3 tons of coal (one of small and two of round), and has 2s. per ton, he would upon this basis be paid under the proposed arrangement 2s. 7½d. per ton of round and nothing for small, and should he produce 24 cwt. more round coal than before he would increase his wages 4½d. per shift. It would be easy to show how by extra care all this and more might be brought about if the Northumberland miners would as a body act in this matter upon the advice of their selected representatives.

That more round and less small coal would be brought to bank

under the suggested method admits of no question. Mr. HENDERSON M.P., has tried it at one of his collieries with the result that whereas under the old method the men were making 50 per cent. of small, that percentage has under the less wasteful system been reduced to 17. Here, therefore, is a system recommended which contributes to the preventing of waste, and thereby enriches the country at the same time that it adds to employers' profits and workmen's wages—a system, moreover, recommended for adoption after the most careful investigation by foremost colliers themselves; yet by the rank and file of the colliers is wholly rejected. Upon what grounds, the reader will involuntarily enquire? Upon grounds unworthy of serious reflection, and which by their own representatives who went to South Wales have been shown to be groundless. The only objection which at all calls for consideration was that relating to crushed coal, and being paid by consideration. Showing how faithfully the men's representatives had done their work, it is to be recorded that these topics were raised by them to the masters before they reported. When upon that occasion objection had been strongly urged against being paid by consideration, the employers promised to deal with the matter in detail, and to pay in such cases by the yard, or upon any other plan which the deputation could show to be more satisfactory. Such readiness by employers to act upon all reasonable suggestions emanating from the men should have contributed to make the colliers as a body accept the general plan and enter honestly upon the settling of the details. Seeing that they have not done this no one will be surprised that the employers should have given notice for a reduction of 20 per cent. in the subsisting scale of wages; nor will there be room for marvel if the colliers even yet repenting of their rash refusal and offering to accept it, the employers declined details which before they would readily have accepted. A definite reply to the masters' notice is to be handed in to-day. We will hope for the best from men, who have hitherto generally deserved our confidence.

THE CLEVELAND TRADE CRISIS.

Whatever may be the result of the efforts now in progress to introduce the manufacture of steel and of homogeneous rails into Cleveland, it is certain that they prove that the district has learnt one of the lessons of the present crisis—the folly of depending almost solely upon one branch of the iron trade. Hitherto it is evident that in the North the whole of the additions to power of production have been either of rail works or of works rendered necessary by the large additions to the rail producing plants. Thus, although the plate manufacture as well as that of merchant and angle iron has continued on the average as brisk as for some years past, yet the stagnation in the rail trade has so affected the manufacture of pig-iron that stocks have doubled in a very few months, and in spite of a lessened output they are still increasing; in fact, remembering that the rail mills consumed nearly a quarter of the whole of the pig-iron made in the district, the result was inevitable, and it has only assumed its present comparatively small proportions because the demand from parts foreign to the district has been increased with the falling price of pig-iron. Recent returns show that the demand from the Continent is less than it was, and although the needs of the foundries—locally and generally—continue large, it is a matter of some perplexity how far Cleveland may find consumers for the pig-iron produced if the falling off in continental needs continues. In one respect there is less to fear, for one of the results of the commercial complications is seen in the lessened output of the blast-furnaces, shown by a falling off of two or three thousand tons in the make of July, and which will be more marked in the current month. It is extremely doubtful how far any resuscitation of demand in the finished iron trade will take place. On the one hand needs of railways must have been accumulating during the past years, for orders are rarely given out to the full in a falling market, but on the other hand there is an increased preference for steel rails, which the northern district has hitherto been unable to supply, and though it is possible that the results of Mr. J. Lowthion Bell's experiments may give an impetus to the demand for iron rails, at present we can only deal with the known preference for the longer-lived steel rails.

All the circumstances of the case, however, point to a demand as large from other districts for Cleveland pig-iron. There are large contracts now in the hands of the ironfounders, in one case for 80,000 tons of pipes, and the cheap pigs of Cleveland will continue in demand not only by the local foundries but by those at a distance. It may be hoped that the needs for malleable purposes in the northern district will not sink below their present ebb; indeed, in one branch there are symptoms of an increase. The large railway and other works in course of construction claim iron in great quantities, and merchant iron has in parts continued in fair demand for some time, and still has similar prospects, but a more chequered report is given of the plate mills, in which considerable variety is known as regards amount of work in hand. But looking to all the branches of this malleable iron trade, we incline to the belief that the lowest demand has been registered, and that any change will be for the better, but the highest authorities now look to the latter end of the year for such a change rather than any earlier period. Only by slow degrees is the resuscitation of demand known, for it is not only, as in this case, a lower demand though lessened trade temporarily, but it is also because part of that existing has found fresh sources of supply, and it is long before diverted trade seeks gratification in the old channels. Thus, even if a greater volume of needs were known now it would be distributed over a greater area, and would be shorn of power to the extent it gained in width of distribution. It would be much the same as a river which after being long pent finds its channel suddenly widened—it fertilises a greater tract, but it loses in scouring power.

We are then driven to the conclusion that little change will be known in the demand for pig-iron at present. We may estimate that for malleable purposes as stationary until towards the close of the year, for foundry purposes locally there is no probability of a diminution of demand, and, on the whole, the same may be said of that arising from other districts, but the probabilities in both the latter cases are in the opposite direction. And it is recognisable that the uncertainties which affect trade are in favour of the more hopeful state of affairs in the future; for instance, Mr. Bell's experiments may beneficially affect the demand for Cleveland iron, but cannot lessen it, and other yet undecided events may similarly be classed. And the due effect of the lessened production of pig-iron in diminishing stocks and giving a firmer tone to the market should not be passed without notice. In the case of a revived demand there are several furnaces ready to be put into blast, but when stocks are increasing to the extent they have of late it is the wisest policy to lessen the production. This has been partly effected in Cleveland, and probably it will be further carried out in the course of a week or two. On the whole, then, the Cleveland crisis is being passed through without the direful effects that have been anticipated. The commercial difficulties are being surmounted in the bulk of cases, and in none is there any present probability of suspension of trade. The want of fresh working capital is being supplied, thanks to the cheap and plentiful money, and it is recognised by such supply that the difficulties which have cropped up have been, not the result of unsound trading on a large scale, but the result of an over development of capacity of production, followed by a further locking-up of capital consequent on the stocking of iron to a considerable extent. The difficulty of over-production is being met—over-production not, be it remarked, over the normal needs of iron, but a production in excess temporarily of the capacities of payment of nations beggared by war, and in the throes of commercial crises. The only cure for such a state of affairs is the reduction of the output, and this is now being seriously set about in Cleveland as we have shown, seven furnaces having been recently blown out in the Middlesbrough port bounds, and though two or three have been re-lit in other districts, there is, as recent returns have shown, a substantial reduction in the make of pig-iron in the Cleveland district. And this we have good reason to know will shortly be increased by the blowing out of two or three furnaces in other localities where the stocking of iron has been recently begun. And until there is a firmer tone and improved prospects it is probable that the output will not be raised to the

maximum known at the beginning of the year, so that it may be assumed that the difficulties of finance and over-production being thus met, a better outlook will be shortly known for the Northern iron trade.

SPONTANEOUS COMBUSTION OF COAL.

From the report of the Royal Commission, appointed to enquire into “the spontaneous combustion of coal in ships, the causes and remedies therefor,” it appears that the increased casualties are chiefly due to the remedies applied—the ventilation of the cargo, more liable to ignition, and thus increases the danger to the ship. The Commissioners elicited that in one case a witness did not wait till the vessel ventilated at all, but the charter-party stipulated for ventilation; so the captain ventilated with shafts up and down each hatchway connected with fore and aft shafts, and on the voyage the coal took fire and the ship was burnt. This vessel was one of four which were loaded under the tips at Newcastle at the same time, with the same coal, and from the same seam. They were each carrying from 1500 to 2000 tons of coal. The fates of the four are instructive. The Euxine, Oliver Cromwell, and Calcutta, were bound for Aden, the Corah for Bombay. The first three ships were thoroughly ventilated; the fourth was not ventilated at all, spontaneous combustion. The Corah carried her cargo safely to Bombay.

Mr. PERCY and Professor ABEL explained that the development of heat in coal cargoes is due to the decomposition of the pyrites in the coal by the oxygen of the atmosphere; they also consider that in the coal dust resulting from the breakage of coal in shipment, &c., the carbon may absorb oxygen from the atmosphere, and that heat may thus be developed to igniting point. In a tropical voyage coal confined in the close hold of a ship will accumulate an amount of heat which no ventilation practicable in those circumstances will suffice to remove. “Such circulation of air as may be established, even in the less compact portion of the cargo, is not likely to have any valuable cooling effect, and the circulation, if there be any, must be very feeble among the more closely lying masses of small coal, so that heat, if developed in these, will accumulate undisturbed.” Indeed, its development would be favoured by the fresh supply of oxygen which a gradual replacement of the air surrounding those parts would convey, “so that a period would be reached sooner or later when the development of heat would be most seriously promoted by ventilation.”

The Commissioners caution the public against the confusion of the terms spontaneous combustion with explosion, and finally conclude—1. That certain descriptions of coal are intrinsically dangerous for shipment on long voyages.—2. That the breakage of coal in its transport from the pit to the ship's hold, the shipment of pyritic coal in a wet condition, and especially ventilation through the body of the coal cargoes, conduce to spontaneous combustion even though the coal may not be unfit for conveyance on long voyages.—3. That spontaneous combustion in coal cargoes would be less frequent if regard were had by shipowners and underwriters to these facts.—4. That when coal is being carried on long voyages the temperature in the various portions of the cargo should be tested periodically by thermometer, and registered in the log.—5. That, with a view to guard against explosion, free and continuous access to the open air, independently of the hatchway, should be provided for the explosive gases by means of a system of surface ventilation which would be effective in all circumstances of weather.—6. That, in order to make known the descriptions of coal liable to combustion, the Inspectors of Mines should be instructed to hold enquiry into all cases of spontaneous combustion occurring in cargoes of coal taken from their respective districts, exporters being required always to record on their specification the denomination of the coal forming the cargo.—7. That no additional legislation with reference to the conveyance of coal by sea is required unless for the purpose of giving effect to our proposals with regard to the enquiries by Inspectors of Mines, and to the fuller specification of coal entered outward at Her Majesty's Customs.

OUR RAILWAYS, AND THEIR FUTURE POLICY.

The period for holding the usual half-yearly meetings of shareholders, together with the serious and distressing fatal accidents which have lately occurred, is directing public attention at the present moment to the great arteries of communication which traverse the kingdom. There is such a complete network of rails, converging to every great centre of population and commerce, and the lines dovetail into each other at so many points and junctions, that the wonder is that far more accidents do not occur, and that the dividends of the shareholders are not more materially reduced by the destruction caused to property, and the damages paid for personal and other injuries. The maintenance of our great iron roads is an efficient state, and consequently the safety of the passengers and the expeditious conveyance of minerals and goods, is a matter of the very first importance, affecting to a greater or lesser degree every person in the kingdom, and having a direct bearing upon the commercial stability and wealth of the nation which cannot be overestimated. It is no use attempting to disguise the somewhat unwelcome fact that railway accidents are on the increase; and probably the exigencies of the times are such—the telegraphic speed by which all transactions are carried out, and so constant and urgent is the cry for still greater expedition—that we must not look for any material diminution thereof so long as the directors feel compelled to respond to these calls, and run more trains over their various systems in order to meet the ever-increasing demands of traffic.

The various traffic returns of the great trunk lines of the kingdom are justly regarded as the commercial barometers by which the state of the trade of the country might be ascertained, but there must be some wrong reading of the barometer somewhere during the past half-year. Taken as a whole, the principal railway companies declare dividends fully averaging those of the past four or five years, whilst it is universally admitted that a commercial depression of unusual severity has existed during the whole half-year. We candidly confess we cannot see how these things are to be reconciled, the more so as we do not find any material diminution in the working expenses of the lines, with the exception of the formidable item of the cost of coal, nor has there been any special immunity from those accidents and casualties which form a by no means inconsiderable item of expenditure. Either the trade of the country proper has been pretty well maintained during the past half-year (the great decrease being in foreign exports), or the dividends have been kept up at the expense of capital rather than bona fide income earned. We suspect, also, that the very minimum expenditure has been made for the maintenance of the permanent way, and there are indications with respect to one or two of our principal lines which point to very large outlays for re-laying, &c., which cannot be much longer avoided.

Having regard to the future prosperity of our railways—the greater safety of passengers, and the more expeditious conveyance of minerals and goods, which, after all, is the commercial life blood of the nation—we feel satisfied the directors and shareholders will not be able much longer to delay looking steadfastly and seriously at the face very formidable expenditures, which, although they may possibly temporarily diminish dividends, will ultimately prove most advantageous to themselves as shareholders and the country generally. We allude to the entire separation—the distinct working—of the passenger from the mineral and goods traffic. The finger of the country is unquestionably pointing in this direction, and it will be well for all parties if the position was at once recognised, and initiatory steps taken to give it early effect. The expenditure for this purpose would be large, but the advantages would be correspondingly so, and would be mutual. One or two of the principal lines in the North and Midland districts have, to an extent at least, adopted the plan, and satisfactory results have ensued. The running of goods and merchandise upon passenger lines—the dangerous shunting at the various stations and junctions, and the inevitable and vexatious delays which consequently occur, are scarcely compatible with public

whilst the very large expenditure which would be saved in engine power, and the greater expedition afforded to both passengers and traffic, would form a substantial addition to the sums available for dividends. Statistics prove that both our passenger and goods traffic is increasing yearly, and increased facilities must consequently be given if we would protect life and expedite business.

The entire separation of the passenger and goods traffic by the laying down of another set of rails over the present route would be the most effectual means of doing so. Directors may not have the power to propound the scheme, or to be willing to recommend it, but it would be well if those who have the management of our lines would keep their responsibilities to their shareholders and their duty to the public in view. There are some able and sound men of opinion that the purchase of railways by the Government, and their management and working under Government supervision and the panacea of all the ills that flesh is heir to in respect to railway matters. Well, if we may take the manner in which our affairs are managed, we do not think any great benefits would result from the change.

We have rather confidence in the collective administrative ability of the various boards of directors, satisfied that they are doing their best not only for the interests of their individual shareholders, but also of the country generally. They have hitherto proved equal to every emergency—they are still equal, and we firmly believe that when the necessity for a complete separation of the passenger from the goods traffic shall have proved itself, and which cannot be much longer delayed—they will not hesitate in the performance of their duty, but recommend the necessary expenditure to their shareholders, assured that such expenditure will be mutually advantageous to their own interests and that of the public.

THE BONANZA MINES, AND THE SAN FRANCISCO PRESS.

WE are in receipt of several Californian papers giving a detailed account of the outrageous and unmerited attacks which have been made by the San Francisco Chronicle and News Letter newspapers against the present condition of the Consolidated Virginia and California Silver Mines of Nevada and their managers, the well-known firm of Flood and O'Brien, which includes Mr. John W. Mackay and Col. James G. Fair—the two latter gentlemen superintending conjointly the workings of the mines at Virginia City. The charges preferred by these papers, controlled by a combination of unscrupulous operators, had for their object to discredit the merits of the Bonanza Mines, and to create during the temporary depression of the stock market a panic among the bona fide shareholders of America, as well as in Europe, and thus to secure for the bears' manipulators, at the lowest possible figures, such a number of shares as will permit them to cover their short sales effected during the last three months. Although very little interest is felt on this side of the performance of such scandalous scenes, which are of frequent occurrence on the San Francisco Exchange, we cannot help expressing the opinion that they most unfortunately engender among our moneyed people in Europe the spirit of distrust which exists in regard to California mining enterprises. It is, however, gratifying to note this time that the conduct of the San Francisco Chronicle has been severely condemned by its daily contemporaries, the San Francisco, Alta California, Evening Bulletin, Morning Call, Stock Report, and by the Virginia Enterprise and Chronicle. These papers, therefore, deserve great credit for having exposed in time the great bear conspiracy, and they prevented a general panic, which would have affected not only the reputation of the Bonanza Mines, but also the integrity of their present managers.

It is most painful to see to what dishonest means the bear manipulators and their organs have resorted in order to attain their nefarious object. They degenerated to personal abuse against the best men of the San Francisco community—such as Messrs. Flood and O'Brien, the founders of the Nevada Bank, and Mr. J. M. Walker, the wealthy and esteemed senior member of the leading San Francisco firm of J. M. Walker and Co., for many years associated with Messrs. Mackay and Fair in the development of the Virginia mines. The Californian public were fortunately warned in time by the above papers, which had no interest in the fight, and the result was the most ignominious failure of the great bear conspiracy. Col. James G. Fair, superintendent of the mines, has since declared publicly that all charges circulated by the San Francisco Chronicle were a mass of lies, and that the mines were never in better condition than at the present time. Such declaration, coming from such a reliable source, produced the desired effect, and the Bonanza stocks are risen to higher figures, to the great satisfaction of the public and the numerous shareholders. On the other hand, we have the authority for asserting that, fully relying upon private reports received here and at Paris from Col. Berton, Commissioner of the French Mint for the Pacific States, the yield of the Consolidated Virginia and California Mines will during the present year exceed the enormous one of last, and, for the two mines, not fall short of fifty millions of dollars.

GOLD MINING IN AUSTRALIA.—From the gold mining statistics for the quarter ending March, for a copy of which we are indebted to the Secretary for Mines for Victoria, it appears that there were 237 Europeans and 11,088 Chinese employed in alluvial mining, and 14,220 Europeans and 128 Chinese employed in quartz mining; total, 49,673. The approximate value of mining plant in use was £40,016. There were 1101 square miles of auriferous ground actually worked upon, and 3208 distinct quartz reefs actually proved to be auriferous. The total quantity of gold got was from alluviums, 7,654 ozs., and from quartz 142,944 ozs.; together, 240,598 ozs. The quantity of quartz crushed was 220,755 tons, averaging 11 dwts. 20 grs. Of quartz tailings and mullock, 8848½ tons were crushed, yielding 1 dw. 20-17 grs. to the ton. Of pyrites and blanketing, 53 tons were operated on, yielding 2 ozs. 11 dwts. 7-13 grs. of gold to the ton. The reports from the several districts are encouraging.

EXTRACTION OF COPPER FROM ITS ORES.—THE HUNT AND DOUGLAS PROCESS.—It has frequently been explained in the Mining Journal that the Hunt and Douglas is what is technically called a hydrometallurgical process, because the copper is removed from its ores in a dissolved state, the solvent employed in this case being a watery solution of protochloride of iron and common salt. Most oxidized compounds of copper—whether obtained artificially by roasting pyritic ores, or found in nature in the forms of carbonates and silicates—when digested with such a solution are converted into a solution of protochloride and dichloride of copper, which are dissolved while the iron of the solvent separates in the form of insoluble hydrous peroxide of iron. When the solution of the chlorides of copper thus obtained is brought in contact with metallic iron the copper is separated in a metallic crystalline state, while the iron goes into solution, reproducing the protochloride of iron, thus regenerating its solvent powers to the liquid, or as it is called "the bath," and fitting it for the treatment of a fresh portion of copper ore. This process of solution and precipitation can, under proper conditions, be repeated indefinitely with the same bath, the only reagent consumed being the metallic iron. The process, after some experimental trials, was first worked continuously for a year in 1872-73 at the Davidson Mine, in North Carolina, under the direction of Messrs. Clington. The ore, a pyritic copper in a slaty gangue, was crushed up to 5 or 6 per cent., crushed to pass through a sieve of meshes to the inch linear, roasted in three hearth reverberatory furnaces, so as to contain about one-fourth its copper as sulphate, and treated in stirring vats in charges of 3000 lbs. The loss of copper in the residue was found to be less than ½ per cent., and the bath maintained its strength in chloride of iron without the use of pyrites or sulphurous acid. The amount of iron consumed was 100 per cent. of the copper produced; the entire cost of producing metal copper from the dressed ore of 5½ per cent. was less than 10s. per ton. Reduction works are now also in successful operation at Phoenixville, Pennsylvania, where copper ore of two grades are treated by the Hunt and Douglas process, one a magnetic

iron ore containing 3 per cent. of copper, chiefly as copper pyrites, mixed, however, with a little carbonate and silicate of copper; the second is a peculiar hydrated silicate. The residues retain but 0.5 and 0.3 per cent. of copper respectively. The process appears to work most satisfactorily, and to be very economic.

REPORT FROM CORNWALL.

Aug. 18.—Comment is superfluous, and prophecy seems hopeless. Instead of the recovery in the tin standard which has been so long looked for and anxiously expected, we have a drop so serious that prices are not merely relatively but absolutely lower than they have been for half-a-century. Beneath the lowest deep there was a lower deep still, and there are, indeed, those who say that even yet we have not seen the worst. Still, however, there is a good deal of hopeful feeling abroad. There are the best of reasons for connecting the low standard in its ultimate causes not with any special depression of the tin trade itself so much as with that vast wide-spread general depression of all branches of industry and commerce, the tale of which is told so plainly in our seriously diminished exports. But when will the tide turn?

There is, however, always a bright spot if we look for it, and in this instance there is a very bright spot indeed. We refer to the most satisfactory report of the Barrow borer made at South Crofty account by Capt. Thomas. Here at length is a boring machine which it has been proved by the test of actual experience in the largest tin mines in the county will do. Here at length is one practical solution of the problem which has perplexed and troubled practical men for years. The borer that will meet the needs of Dolcoath can certainly be adapted to the wants of our mines generally, and here such a borer is. No doubt by-and-by we shall find that other borers are also available, but the fact remains that the Barrow is the first that has stood the test. South Crofty is now about to follow the Dolcoath lead by purchasing a couple of the Barrow borers. Three will not be any absolute saving of expenditure, but an immense gain in speed, and there is nothing in which the old maxim that "time is money" is more true than in mining. Many a promising mine has been "knacked" simply because with the means at command it could not be developed with sufficient rapidity. The successful introduction of the boring machine is the dawn of a new era in Cornish mining, and in it we have the source of a new and enormous recuperative power.

One of the new explosives has become unluckily prominent this week. We refer to tonite, which is said to be a preparation of gun cotton, and has been recommended as perfectly safe, only explosive by the detonator. However, three accidents have occurred in its use at West Basset, and in one case death has resulted. It was stated at the inquest that the cartridge exploded while it was being driven into the hole with a tamping bar, and that no detonator was used. Dr. Foster, the Government Inspector of Mines, is at present absent from the county on his holiday. When he returns it is likely that this matter will be fully enquired into. The perils attendant on the use of gunpowder are well known; dynamite is now so well understood that according to Dr. Foster's report no accident occurred from its use during the past twelve months in the county. But it is necessary that the exact qualities of all new explosives should be carefully investigated. Miners, no more than other men, will take more care than they are told to be useful, and in this case the instructions issued with the tonite state "that it can only be exploded by the detonator, and if set fire to in a borehole without the cap it will only burn; also that there is no danger whatever in loading a borehole so long as the cap and primer are not inserted, and that the ordinary cartridge may be cut or broken up, and rammed in with a metal or other rammer as tight as possible." According to the evidence it is clear that the men were only dealing with it in the way they had been told was safe. There has evidently been some mistake in testing its qualities.

The Vice-Warden of the Stannaries has delivered a very important judgment in the case in which it was sought to settle Mr. W. H. Eadean on the list of contributories in Wheal Wrey, Ludcott, and Trelawny, as respecting 1000 shares for which he was alleged to have applied. His Honour laid down that before a man could be settled as a contributory a valid agreement must be proved between him and the company to take shares. The question then was—did Mr. Eadean agree with the company to become a shareholder? The Vice-Warden was of opinion, upon the evidence, that he did not. The evidence was that at the meeting of directors on June 15 he announced his intention of taking 1000 shares, and that in substance he allowed that intention to be repeated at the Liskeard meeting. The case could not be carried beyond this, because when the secretary proposed to allot the shares he refused to have them. They were never, in fact, allotted to him, and although Mr. Eadean and Mr. Edgcombe protested, no actual attempt was made to force those shares upon him. In point of fact then he at most never advanced beyond the stage of an application for shares, and that was the character in which he appeared before the meeting at Liskeard. The legal position of an applicant for shares was simply that of a man who had made an offer which might be retraced at any time before acceptance. Until the company had testified its acceptance by allotment, or by any other unequivocal act brought home to the knowledge of the applicant, and adopted by him, the applicant was at liberty to withdraw. The status, therefore, of Eadean held at the Liskeard meeting was the status of an applicant for shares, with the legal incident attached to that character—liberty to withdraw the offer; and he (the Vice-Warden) was quite unable to see how from this conduct a valid agreement to hold shares in the company, which Eadean would be stopped from disputing, could be inferred. Legally, Mr. Eadean was in exactly the same position as every other applicant for shares on that list, and those who placed reliance on it, and permitted their votes to be influenced by it, must be taken in that Court to have known that no applicant was at liberty to withdraw. The status, therefore, of Eadean held at his intention until the company had closed with him. It was equally open to the company to decline to allot to any of these applicants if it had thought fit to do so. "I will only further observe," his Honour went on to say, "that supposing Eadean to have represented himself as a shareholder at this meeting, that would not have rendered him liable to be placed upon the list of contributories unless his agreement with the company to be a shareholder were proved. You cannot force a contract upon a man with a third person which he never made simply because he falsely tells you that he has made it, though in a proper case you may have your remedy against him for the false representation. As to the conduct of Mr. Eadean, judged by the standard of honour, I prefer to say nothing. Since the case presented against him failed on its own showing, he was under no obligation to volunteer evidence, nor required to meet it. All I will say, therefore, is that unless he could have disproved that which was given by Mr. Eadean and Mr. Edgcombe, the disapprobation so strongly expressed by those gentlemen appears to me to have been well founded. This application must be dismissed, and the costs of all parties must fall upon the estate."

TRADE OF THE TYNE AND WEAR.

Aug. 17.—The Steam Coal Trade continues good, and shipments are on a great scale. The subject of large or small coal in Northumberland continues to attract much attention; of course small coals, no matter what the quality is, are nearly worthless, and it is possible that those coals may again be wasted as they were during many years when they were left underground, or consumed in large heaps at the mouth of the mines. It is a matter for surprise that these coals are not converted into bricks or patent fuel—a valuable article of commerce; this is done, we believe, pretty extensively in South Wales and other districts. The delegates of the Northumberland miners met in Newcastle on Monday, when the question of the introduction of the Welsh system, and also the proposed 20 per cent. reduction in wages, were considered. The proceedings lasted several hours, and the meeting was ultimately adjourned until Friday. The executive of the Northumberland Miners' Union have issued a circular to the men on the question of the Welsh system of working coal which the owners wish to introduce here, the substance of which is as follows: The owners' proposal is that the men be paid for round coal only, nothing whatever to be paid for small coal. When the coal is brought to bank it is weighed in gross; afterwards the small would be weighed and deducted from the gross, which would leave the round coal got in each tub, and for which the hewer would be paid for. If this were done without an increase in the wages the miners would evidently suffer a loss; but the owners propose an increase in proportion to the amount of small made, so that it will be impossible for the men to make less wages. For instance, suppose the amount of small made at a certain colliery was 30 per cent., the price per ton for round would be increased 30 per cent. above present prices for both kinds. This is the only change proposed, for there is none asked for in the mode of working, nor any regulation as to filling the small or leaving it down the pit, the only motive of the proposed change being that the owners wish to encourage the men to work as much round coal as possible, as their wages would depend entirely upon the round. The fact of the wages being fixed in this way will

make it impossible for the men to earn less wages, but if they make more round, which they are sure to do, they will increase their wages. In conclusion, the circular says that 2 cwt. of round coal per man per shift would be an advance on his present wages of 3d. per shift, or 5 per cent. They say, also, that the benefit to the owners on this 2 cwt. of round coal per man at the present market price of 10s. per ton would be 1s. Of this the men would receive 3d., which would leave 8d. for the owners, and would place the owners in a better position than a 10 per cent. reduction on the gross wages of the men. This is, we believe, a correct statement of the case, and surely the men will see that it is their duty and interest to adopt the method of weighing proposed.

The Iron Market at Middlesbrough, on Tuesday, though somewhat flat was well attended. There was a quiet business doing in pig-iron, but, on the whole, there was more inclination to do business than was the case at the last two or three markets. The enquiry is largely on account of future delivery, as buyers who will want iron throughout the year think it advisable to secure themselves at the present prices for present delivery. There has been some falling off in the shipments, whilst the dullness of the finished iron trade limits the local consumption of pig-iron. Quotations to-day were scarcely as firm as a fortnight since, and were about—No. 1, 49s. 6d.; No. 3, 48s.; No. 4, 47s. 6d. The financial disturbances seem to be largely disappearing, though another failure is talked about. The virtual settlement of Mr. Vaughan's affairs has done much to restore confidence throughout the district. A good deal of caution is still, however, observed. In finished iron there has been a very dull state of things, and no improvement can be recorded. The production of nails has now got down to the lowest limit which has appeared for years past. There is at the present time some work for plate mills still on hand, but many of the works are but irregularly employed. The bar-mills are only indifferently employed. The prices of manufactured iron continue nominally about the same. Rails average about 6s. for heavy sections, and plates 7s. 5s. Common bars stand at 6s. 5s. to 6s. 7s. 6d. A movement is being made by the trade to obtain a reduction of railway charges on the mineral rates, the North Eastern Railway Company having increased their charges during the period of prosperous trade and high prices in 1875. The Coal Trade is very slack, and sellers of manufacturing sorts state that there is no market. Prices both of coal and coke are unaltered.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Aug. 17.—Mining operations have undergone no change since last notice, so far as Derbyshire is concerned. Of lead ore something like an average quantity is being raised, and one hears of no new discoveries or startling finds, whilst there appears to be very little speculation. At the collieries business is by no means brisk; several are still on short time, and are likely to continue so. The demand for house coal is very quiet, the weather having some effect on the consumption, whilst the competition is as keen as ever, so that prices are very low. A moderate business continues to be done with London in Silkestones as well as in some other qualities, but the returns from several of the leading collieries show a considerable falling off. Clay Cross not appearing so well as formerly. A steady business has been done from Langley Mill and Grassmoor. At Shirland quietness prevails, and working is said to be going on very well, but it is very doubtful whether the colliery will ever be made to pay, for there is every indication that coal will come down lower than it now is, and that short time will be the rule. The ironworks have been doing tolerably well, although, as might be expected, the demand for iron of any description is far below what it has been, and there does not appear to be any signs of improvement.

In Sheffield many branches are very badly off, and the men are working short time. Heavy plates have been extensively produced, and a fair amount of business is being done in Bessemer rails. Ordinary rails are quiet, and there does not appear to be anything like activity with respect to ordinary plates and sheets. Cutlery is quiet, and so is the saw trade. In the district some few works are fairly off for orders, and the foundries are able to keep their men on full time. Manufacturing fuel is easier to buy, whilst household coal is a drug at many places. The consequence is that several collieries are only working about four days a week. In the South Yorkshire district generally business at the ironworks is better than in Sheffield, more especially as regards foundry material, some fair orders being in hand for pipes, pistons, and builders' and ordinary colliery castings. Colliery owners still complain of the state of trade, and the low rates at which they have to sell their coal.

In all markets there is more coal than is actually required, and this is likely to be the case even to a greater extent than at present. There has been a fair enquiry for steam coal, and shipments have kept up very well, this, of course, being about the busiest period of the year. Small coal of every description is in very moderate request and low in price. In Leeds and Wakefield business is quiet, and in most districts trade for some time has been in a languishing state, and no one is inclined to hazard an opinion as to when a change for the better is likely to take place.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Aug. 17.—There are indications running through both the pig and finished departments of the leading manufacturing industry of South Staffordshire and East Worcestershire which are more encouraging than those reportable for a few months past. Purchasers are less indisposed to buy; in truth, they have bought with less reluctance than previously during that time. No doubt prices have not in modern times been at a lower level than that at which they are now found, but the difference arising out of the lower quotations is insufficient to account for the improvement. Of this the secret must be looked for elsewhere, and we are inclined to think it will be found in the disposition to buy iron produced in the mills and forges shown by the majority of the consumers of that commodity. Nor must the improvement be understood to rest there; people who require crude iron to be used in foundry purposes are amongst the buyers of the product of the blast furnaces both of this and other districts offered for sale in this part of the kingdom. Pig and finished ironmakers alike have had an encouraging amount of business on hand in the past week and fortnight, and they, therefore, speak in a less unsatisfactory tone of what is being done. The sultry weather is interfering somewhat with the activity at the finished iron establishments, but this is being made up for by beginning, as some works do, earlier in the week than heretofore.

On Change in Birmingham to-day, as in Wolverhampton yesterday, transactions were made known and reports were brought in which fully bear out the foregoing observations. Makers of neither pig nor finished iron are to be congratulated as to the prices which they are receiving; still, certainly in respect of the latter, the terms upon which they were able to get pig-iron indicated a little more margin for profit. Good all-mine pig-iron, for which 4l. 10s. was recently demanded, was to be had at 4l. 5s.; South Yorkshire all-mine pigs sold freely at 3l. 5s., short weight; and a part-mine and part-cinder pig made in South Staffordshire changed hands at 2l. 10s.; and a low-class foundry iron sold at slightly under that figure. Finished iron was to be had at as low a price as 6l. 10s. for common bars, notwithstanding that 9l. was still the price at which alone A 1 bars were to be obtained. In bars of a medium quality a fair business was reported. The same is to be said of reliable plates, but the makers of common plates and angles were seeking trade. Merchants are believed to be holding back orders for best bars, under the impression that that quality must by-and-by come down another pound. Makers did not, however, encourage the expectation, but this did not bring about any change in the action of the buyers. There are no fewer complaints than heretofore as to the want on the part of the miners of co-operation with their masters in encouraging trade by working more hours. Throughout North Staffordshire the works are gradually getting again into such steady occupation as the orders will allow, and the accumulation during the wake week has improved the prospect of the early future.

The North Staffordshire Mining Institute and the South Staffordshire and East Worcestershire Mining Institute have each had pleasant excursions—the first to the works of the Welsh Slate Company, at Rhylwyddir; and the other to Oxford, to the School of Mines, in London, the Crosswell and Abbey Mills pumping stations of the Metropolitan Main Drainage Works, and to the Royal Arsenal at Woolwich. [A detailed report of these excursions appears in the Supplement to this week's Journal.]

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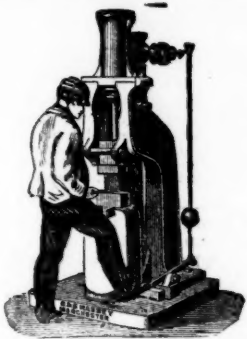
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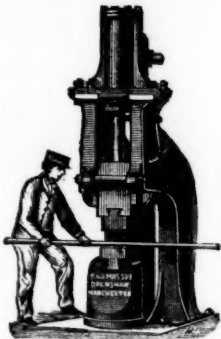
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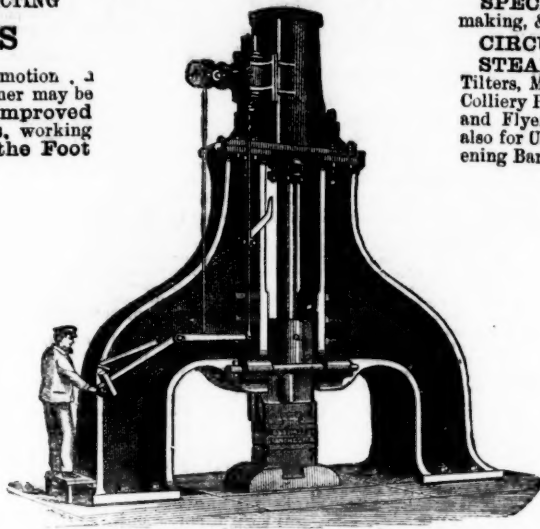
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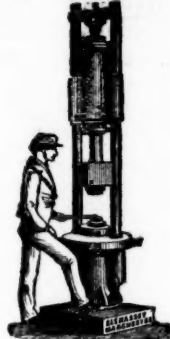
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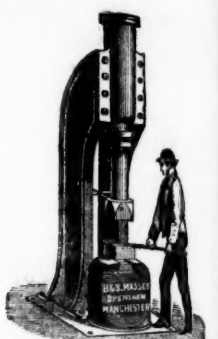
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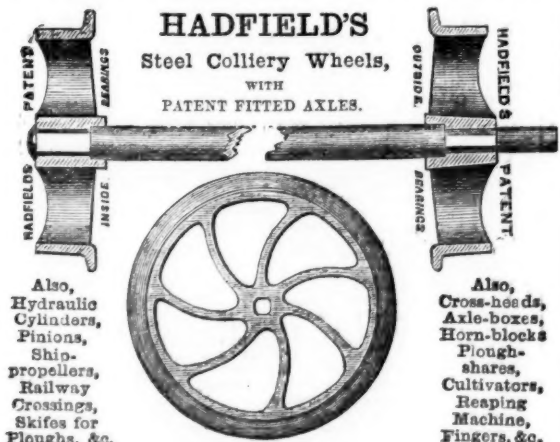
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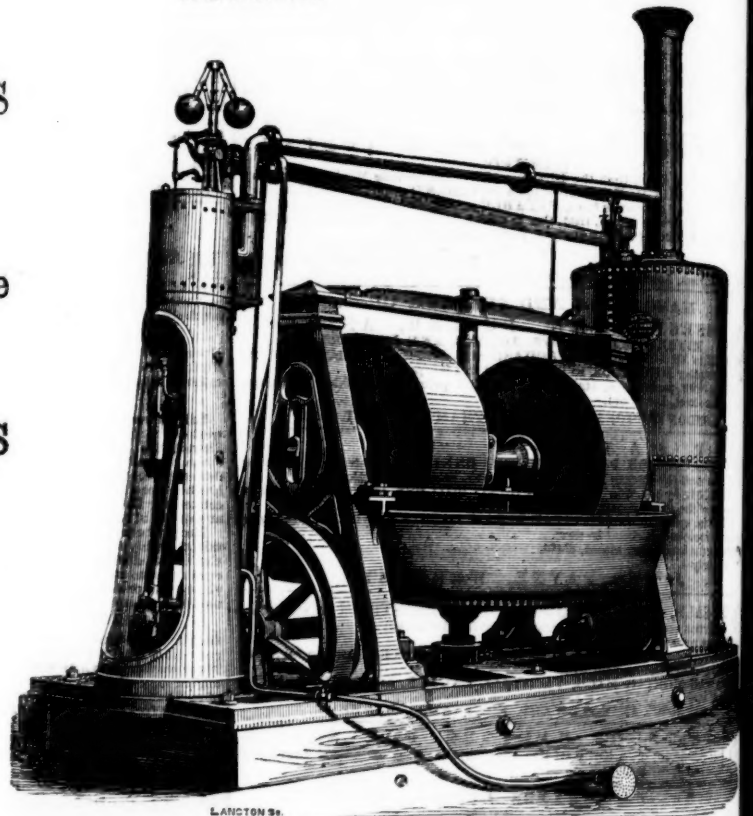
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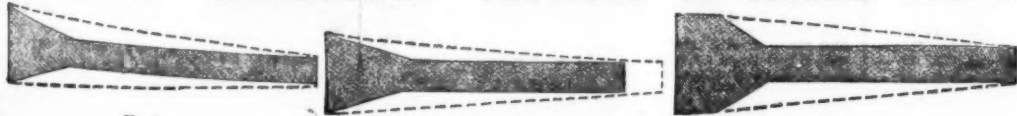
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